SPECIFICATIONS for the ELECTRICAL SYSTEMS for the

METROPOLITAN SQUARE DEVELOPMENT THEATRE NO. 10

MANAGERS

Todd, Robertston, Todd Engineering Corporation
Todd & Brown, Inc.
420 Lexington Avenue,
New York City.

ARCHITECTS

Reinhard & Hofmeister
Corbett, Harrison & MacMurray
Hood & Fouilhoux
420 Lexington Avenue
New York City.

BUILDER

John Lowry, Inc.
270 Madison Avenue,
New York City.

CONSULTING ENGINEER

Clyde R. Place
420 Lexington Avenue
New York City

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Sheets - 114
Title Sheet
January 11, 1932

Subject	Page		Subject	Page
Act Announcer	71		House light – soffits	62
Adds and Deducts by vendor	108		House light – Choral runway footlights	63
Arc lights – Proscenium	115		House light – choral runway spots	63
Arc lights – Schedule	115, 134		Marquee (Marquise)	65, 135
Arc lights – Stage	116		MG (motor generator) sets	55, 132, 142, 144
Arc lights– Marquee	65		Miniature lighting	74
Audio – "God mic" (Rehearsal system)	91		Musician's Pit Rail spots	47, 131
Audio – Broadcasting system	97, 142		Orchestra pit outlets	133
Audio – Hard of Hearing (Seat Phone)	93, 146		Organ	67
Audio – Public Address system	87, 122, 142		Pockets, arc & incandescent	52, 131
Audio – Recording system	95		Pockets, revolve	53
Audio – Stage Manager paging	92		Pockets, stage work	55
Band car	64		Portal spots	48
Border and Bridge lighting cables	45		Preview rooms	60, 96, 136
Borderlights	43, 128, 129, 146		Projection room, main	58, 86, 133, 134, 144
Bridge, spot and flood lighting	44, 128		Projection room, rear	59, 94
Bridges – side	49, 130		Proscenium Floodlights	47
Burglar alarm	102, 122		Reactors	40
Buzzer (signal system) & schedule	100, 122		Seat indicating system	103, 136
Carriage Call	122		Selsyns	39
C-Cove (Musician's floods and spots)	61, 132		Spot booths	57
Clock system & schedule	76, 122, 141		Sprinkler alarm	122
Company switches	60, 133		Stage Manager's panel (stage director's)	60
Conductor's stand (leader's stand)	71		Stage towers	49
Contour curtain	66		Switchboard	37, 112, 127, 140, 143
Cyc stars	73, 136		Telephone – summary	121
Douser and control	54		Telephones, Dictograph & schedule	84
Drawings, list of	30		Telephones, electricians' & schedule	85
Dressing rooms	69, 122, 133		Telephones, organ	75
Fire alarm	74, 122		Telephones, PAX House phone & schedule	80, 140, 147
Footlights	47, 130, 140		Television	135
Footlights – cyc	51, 131		Time Beater	71
Gridiron Junction panels	46		Watchman's clock	122
House light – coves	61, 133, 139		Work and test lights	51, 68
House light – perforations	62		Work included	118

SPECIFICATIONS

for the

ELECTRICAL SYSTEMS

GENERAL CONDITIONS

1. The General Conditions are hereby made a part of the specifications for the Electrical Systems. This Contractor shall assume all obligations contained therein that affect his work.

DRAWINGS

2. The drawings showing the Electrical Systems, issued with these specifications, as well as the Architects' and Structural Engineer's drawings shall be followed by the Contractor, but it is incumbent upon him to visit the location of this site and installation and ascertain for himself the present conditions, prior to sending in his proposal.

DESIGNATIONS HEREIN

3.	"Owners"	Metropolitan Square Corporation.
4.	"Architects"	Reinhard & Hofmeister Corbett, Harrison & MacMurray Hood & Fouilhoux
5.	"Managers"	Todd, Robertson, Todd Engineering Corporation Todd & Brown, Inc.
6.	"Engineer"	Clyde R. Place
7.	"Builder"	General Contractor
8.	"Contractor"	Contractor for Electrical Systems.

WORK NOT INCLUDED

9. Tank switches and alarm boards, except as herein called for.
10. Lighting fixtures, except as herein called for.
11. Public telephone instruments.
12. Public telephone wiring and cable, except as herein called for.
13. Motors, excepting motor-generator sets.
14. Rheostats and controllers, except as herein called for.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

15. Removal of rubbish.
16. Exit and directional signs.
17. Fan alarm panel and relays, except as herein called for.
18. Pressure reducing valve alarms, except as herein called for.
19. Damper control equipment, except as herein called for.
20. Air filter control equipment, except as herein called for.
21. Power Transformers (High Tension)
22. High tension switching equipment.
23. High tension cables.
24. Elevator swing cable, except as indicated for Stage and Pit Lifts.
25. Projection, spot and effect arc machines.
26. Rheostats for arc machines, except as herein called for.
27. Bridge and tower incandescent spot units.
28. Baby spot units.
29. Bridge and proscenium Selsyn floods.
30. Stage portable equipment, except as herein called for.
31. Cloud machines.
32. Public Address and Rehearsal Equipment, except as herein called for.
33. Broadcasting equipment, except as herein called for.
34. Sound picture equipments, except as herein called for.
35. Managers' Call and Seat Phone Systems, except as herein called for.

WORK INCLUDED

36. The Contractor shall furnish and erect all the materials and perform all the labor that may be required to install a complete system of electric wiring from the entrance of the service to each and every outlet, switchboard, panelboard, motor and the like indicated on electrical drawings, and such other work as hereinafter specified.

37. These specifications are intended to describe and to call for a complete Electrical Installation, for which this Contractor shall furnish all labor and materials, tools, elevating apparatus, transportation, permits and certificates, liability insurance, temporary and permanent protection and superintendence necessary and required to execute and to make this Electrical Installation complete in every way and guaranteed substantial, safe, economical and satisfactory in its operation.

38. All materials, apparatus, design, workmanship and drawings for this Electrical Installation shall be subject to the approval of the Architects and Engineer, and shall be in accordance with all existing Laws, Rules and Regulations, both local

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

and State, and National Board of Fire Underwriters.

ARCHITECTS' DRAWINGS

39. This Contractor shall consult, refer to and be guided by the Architects' plans and details for hung ceilings (pipe galleries), and furred spaces, as well as any interior or special decorations and paneling.

40. All outlets such as for light and switches and base receptacles, shall be located in a symmetrical manner in accordance with the Architects' plans.

41. This Contractor shall also study and familiarize himself with the floor elevations, floor construction and steel plans in order to verify this construction as affecting in any way the installation of the Electrical Systems.

42. All outlets shown for public areas are approximately indicated for estimating purposes only. Final locations will be definitely shown on the Architects' scale details.

43. The above mentioned drawings are on file in the Architects' Office and such plans will also be on file in the office of the Architects' Superintendent on the job, to which this Contractor shall refer when laying out and installing his work.

44. Any questions arising which might affect the proper installation of the Electric Systems in accordance with the electrical plans and specifications, shall be brought to the attention of the Architects by this Contractor prior to going ahead with his work.

CODE RULES

45. All work and materials shall be in full accordance with the rules of the National Board of Fire Underwriters and all other boards or departments having jurisdiction. Contractor shall procure all the necessary and usual certificates for all work installed by him, pay for all fees and charges connected therewith, and deliver same to the Architects before his work will be finally accepted.

46. Before submitting his bid, the Contractor should familiarize himself with the rules of all boards and departments having jurisdiction, and he shall notify the Architects with his bid, if

in his opinion, any work or material specified is contrary to any such rules, otherwise the Contractor shall be responsible for the approval of all work or materials, and in case the use of any materials specified is not permitted, a substitute, approved by the authorities and by the Engineer shall be furnished and installed without extra cost to the Owners.

PROPOSALS

47. Contractor shall submit his proposal in the form called for by the Managers and also in accordance with the requirements of these specifications.

48. Special attention is called to the fact that alternates as listed on the final sheets of these specifications, must be filled in, otherwise the proposal from the Contractor cannot be considered in comparison with other proposals.

GENERAL INFORMATION

Building :

49. The building will be a high grade structure, with two (2) dressing room sections, a three-balcony auditorium, a stage, and lobby section.

50. The building will be of fireproof construction with skeleton steel frame, brick and stone exterior, tile and concrete partitions, and concrete floors.

Procedure :

51. All work coming under these specifications will be started at such time as called for under contracts for this work.

52. The building will be furnished complete as a whole and when done it is intended that it and all working parts therein shall be ready for permanent operation.

53. The various systems of construction are to be carried on in conjunction with each other and so arranged that any one dependent upon the other shall be installed so that the operation of all can be carried out at practically the one time.

Electrical Energy :

54. The light and power installation shall operate with the Electrical Energy obtained from outside sources. The company which is in a position to supply this Electrical Energy is known as The United Electric Light and Power Company. The entire system shall be in all ways satisfactory to the service company and all labor and materials necessary to secure the approval of the service company shall be furnished by the Contractor whether specifically mentioned in these specifications or shown on the plans, or not.

55. If anything in these specifications or in the accompanying plans is missing from or contrary to the rules of the service company, the Contractor shall refer the matter in writing to the Engineer for a decision, previous to signing contract, otherwise; the above requirements shall be complied with without redress.

56. The Electrical Energy for Light will be alternating current 120/208 volt 3 phase 4 wire; for Power 208 volt 3 phase 3 wire alternating current.

57. The Electrical Energy for light and power will be separately connected to the light and power switchboard and so operated throughout the building.

Construction :

58. The entire distributing system including feeders, shall be in conduit.

59. All conduit work generally, especially the branch circuits and horizontal feeders shall be run concealed and the vertical risers and feeders will be in shafts, where possible.

Delivery :

60. Contractor shall give earliest date at which he will be able to start his work and also the delivery of his material. All costs of delivery of material and apparatus from outside shipping points to the site shall be cared for by the Contractor.

Electrical
Metropolitan Square
Theatre #10.

Erection:

61. The erection of all Electrical Work shall begin immediately upon the receipt and delivery of material as sanctioned by the Architects at the site. The Contractor shall furnish the services of an experienced erecting superintendent who shall be constantly in charge of the work, together with all necessary foremen, wiremen, helpers and laborers required to unload quickly and properly install, operate and test out all the Systems.

62. The drawings showing the layout of the Electrical Systems issued with these specifications, show the approximate locations of outlets, panelboards, motor connections and other electrical apparatus, but the permanetly determined upon locations of these materials shall be subject to the approval of the Architects, who reserve the right and privilege to make any reasonable changes in the locations indicated prior to the installation of this material, without extra cost to the Owners.

63. The plans show the general run of the feeders, branches and conduits, and are not intended to show the exact routing of the circuits or locations of the conduits. Such final determinations are governed by the structural conditions.

Contractor's Plans and Specifications:

64. After the contract has been awarded, the Contractor shall submit for the approval of the Engineer, a detailed specification and working drawings describing in detail the design, construction and operation of apparatus such as switchboards and panelboards to be supplied by him, which apparatus is to embody the fundamental features and requirements set forth in these specifications.

65. The approval of the Engineer of any drawings or samples submitted by the Contractor will be considered as general only and to aid the Contractor in carrying out his work. This approval does not in any way relieve the Contractor from the necessity of furnishing the materials and performing all work as required by the plans and specifications.

INSTALLATION DRAWINGS

66. Before final payment is made, the Contractor shall furnish the Architects for their record, drawings in ink on tracing cloth, showing the work as actually installed. The size,

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

scale and number of sets of these drawings shall be as approved.

PAINTING

67. All painting shall be done by Others under the Painting Section of the specifications, unless otherwise specified herein.

CUTTING and PATCHING

68. Contractor shall do all cutting and fitting of the work of the construction trades to accommodate the installation of his work, but no cutting of any part of the structure or finish shall be done without the approval of the Builder.

69. Patching of cut work will be done by Others, but any unnecessary cutting or damage shall be paid for by this Contractor.

SOUNDPROOFING

70. Contractor shall inform himself fully regarding the various spaces that are to be soundproofed and accoustically treated and shall be required to install his work in such a manner that will not affect the purpose of said treatment.

71. In the event that it shall be necessary to pierce the soundproofing, same shall be done only at the direction of the Engineer.

SAMPLES

72. Within twenty (20) days after the contract has been awarded, the Contractor shall submit to the Engineer, for his approval, all samples in unit lengths or quantities of materials he proposes to use for the Electrical Systems.

ACCESSIBILITY

73. Contractor shall inform himself fully regarding any peculiarities and limitations of the space available for the installation of all materials under his contract.

74. Contractor shall see that all his equipment such as junction and pull boxes, switches and controls and such other apparatus as may be necessary to be reached from time to time for

operation and maintenance, are made easily accessible.

75. Although the location of this equipment may be shown on the Electrical Plans in a certain place, the construction of the building may disclose the fact that the locations for this Electrical Work does not make its position easily and quickly accessible. In such cases the Contractor shall call attention to this fact before installing his work, for action by the Architects, and shall be guided by the Architects' and Builder's written instructions.

CHARTS

76. Contractor shall supply a diagrammatic feeder plan of large scale, framed and glass covered, showing the wire connections from main switchboard to all light and power panels and starting boxes designated.

CO-OPERATION

77. Contractor shall furnish to every contractor whose work adjoins or is contingent upon his work, such information as will assist in laying out their and his work and installing his work satisfactorily, in order to avoid delay and obviate defects in any part of his or the whole equipment, all as approved. This information to be duly recorded by copies in triplicate, two to the Architects.

SYMBOLS

78. The symbols for the Electrical Work as indicated on the plans are in part those adopted and recommended by the National Electrical Contractors Association of the United States, and the American Institute of Architects. Any symbols not covered by this standard will be described on the plans as to what they signify.

MAKER'S NAME

79. No equipment which is to be exposed on finished walls or in rooms in this building, shall have attached to same after installation any maker's name or advertising. The mechanical equipment such as motors, switchboards, panelboards and the like shall bear the name and address of the maker.

GAUGES

80. Unless otherwise specified, all wire and cable sizes given in this specification or on the accompanying plans shall be understood to be in B & S gauge and thickness, of sheet metal, in Birmingham Gauge.

TESTS

81. The various parts of the Systems shall conform to the tests designated and more fully hereinafter described.

82. Contractor shall provide the Engineer and Architects with every desired means of inspection of his work as it progresses and shall make without extra charge, practical demonstration with approved instruments of any finished portion of the installation previous to or at the completion of the entire installation.

83. The necessary demonstration current will be furnished to the Contractor, in lieu of requirements set forth in the General Conditions.

GUARANTEE

84. All work under this contract shall be guaranteed by the Contractor for a period of one (1) year from date of acceptance.

85. Written guarantee in form approved by the Architects made to the Owners, shall be delivered to the Architects by the Contractor before final payment is made.

WORKMANSHIP AND MATERIALS

NOTE

86. The names of manufacturers of materials and apparatus are not given in the body of this specification. All manufacturers' names are listed under the heading "Proposals" in the last section of this specification, except in such cases where it is essential that figure numbers of some specific manufacture be given for the purpose of establishing the quality and character desired for this particular material or apparatus. In all such cases full consideration will be given to propositions from other manufacturers of materials of equal quality and character.

WIRES and CABLES

Marking :

87. All wire shall have a distinguishing woven colored braiding for identifying phases for all circuits and feeders throughout.

88. The wire shall be "Intermediate Grade" rubber covered single conductor. Wires of sizes up to and inclusive of #8 B. & S. gauge shall be single braided; all larger sizes shall be double braided. All conductors of #6 B. & S. and larger shall be stranded.

Make:

89. They shall meet the Engineer's Specifications on file in the Electrical Testing Laboratories, 80th Street and East End Avenue, New York City, and shall be of Anaconda Wire Co's make.

Samples:

90. These shall be taken from the stock delivered at the building at any time and submitted to the Engineer for his inspection and tests. The Contractor to pay for not less than two (2) certified electrical and mechanical tests from an approved Electrical Laboratory. The certificates to be delivered to the Architects.

Copper:

91. All copper shall be refined and properly tinned and have a minimum conductivity for soft drawn copper as called for in the A.I.E.E. Standardization Rules No. 9050.

Insulation:

92. The insulation shall be of the thickness and dimensions as specified by the National Board of Fire Underwriters for six hundred (600) volt pressure.

93. The insulator must be elastic, homogeneous, and comply with all the mechanical and electrical tests, in accordance with the Engineer's Specifications.

94. The insulation shall be put on by the tube or strip method.

95. Unreclaimed, pure dry, Hevea or fine Para rubber shall be used in the manufacture of the rubbere compound, and layers of cotton tape and cotton braid shall be thoroughly impregnated with a moisture-proof insulating preservative compound.

CONDUIT

96. All conduit shall be of soft steel full standard weight and have a heavy galvanized coating, enameled internally, with an approved flexible exterior finishing coat. Enameling and galvanizing shall not crack or flake when the conduit is bent at angles on a radius equal to eight times its inside diameter. The conduit shall be of the National Metal Moulding Company's make, known to the trade as "Sheraduct".

OUTLET BOXES

For All Purposes :

97. They shall be of the stamped steel type of not less than No. 14 B & S gauge with removable cover. They shall be thoroughly and heavily galvanized and of approved make.

Requirements of Boxes:

98. Each outlet box shall be of size and form adaptable for its particular location and for the kind of fixture to be used and arrangement of connection to conduit and structure.

99. Generally, they shall be 4-inches square or octagon. They shall admit of being readily set and firmly joined. Nails must not be used in any manner whatsoever on inside of outlet boxes.

100. The cover shall be removable without disturbing the rest of the outlet box or any of the conduit connections. A cover shall be placed on all ceiling outlets at the time they are secured in position.

101. All ceiling fixtures outlets in concrete slab shall be of the concrete type with removable bottom covers and 3/8" fixture studs. Receptacles and local switch boxes shall be 4" square standard type with regular deep switch covers. Outlet boxes in hung ceilings to be regular deep type with covers. Capped outlets shall be provided with Steel City type "X" invisible covers. So-called "Pancake" boxes will not be allowed.

102. Wall bracket outlets, except as noted in subsequent paragraph, shall be 4-inches square and 1 5/8" deep with cover having 2 7/8" round opening and except for one light receptacle shall be furnished with 3/8" fixture stud.

103. All outlets for bracket fixtures in public rooms as directed shall be standard 4" x 4" boxes with T & B or equal #315 French covers and equipped with T & B #20 fixture stud installed with four bolts.

104. Other types of outlet boxes are hereinafter specified.

CABLE SUPPORT BOXES

105. Cable support boxes shall be installed in all risers at the levels required by Code, and secured to building steel. These boxes shall be built of heavy galvanized steel plates not less than No. 10 B & S gauge riveted to an angle iron frame, with removable cover secured by brass machine screws and shall be stiffened with heavy angle iron. Cable supports shall be of improved type. Cable supports and boxes must be in all ways satisfactory to the Engineer and subject to his approval.

JUNCTION and PULL BOXES

106. Pull boxes built in a manner similar to that specified for "Cable Support Boxes" and subject to the Engineer's

approval shall be furnished and installed where indicated, and wherever else such a box may be deemed necessary by the Engineer to facilitate the pulling of wires and cables. All such boxes must be made accessible and shall be built only from approved detail working drawings.

107. Conduits shall enter these boxes through tight fitting clearance holes, and the combinations of bushing and outside shoulder device shall secure conduit to box, the feeders passing through box shall be covered with asbestos tape and supported evenly by porcelain clamps. Each feeder in box shall have a cloth designating tag tied on it. The cover shall be designed for quick removal.

108. When the system is finished, a box shall contain no openings, except into conduits.

ENCLOSURE BOXES FOR PANEL BOARDS

Box:

109. Each panelboard shall be placed in a suitable enclosing box. Boxes shall be built only by the panelboard manufacturer, or by a box manufacturer satisfactory to the Engineer.

110. Boxes shall be made of sheet steel "bent up" and welded or riveted together, with interior angle iron frame. In general, No. 12 Birmingham gauge steel will be required in smaller boxes and No. 10 Birmingham gauge steel in larger boxes. Boxes for panels of over 30 circuits shall be double width.

Doors in Trim:

111. Furnish and install No. 12 Birmingham gauge steel doors and trim or gutter covers for all panelboard boxes.

112. Trims or gutter covers shall be attached directly to box by brass machine screws drilled and tapped in angle iron frame of box. The trim shall have two doors hung on brass butts and arranged so that the larger door will cover gutter or wiring space.

113. The small door in center of the large door shall be arranged to cover the switch compartment. Both doors

shall have "Yale" cylindrical locks with flat paracentric keys in duplicate.

ELBOWS

114. Elbows shall be of the same materials as the conduit, and inspected in a similar manner. Elbows may be formed at the building, providing the cross section is not changed by bending, and the coating inside and outside remains unharmed. The radius of the curvature must not be less than approximately six (6) times the conduit diameter, and the enclosed angle not less than 90 degrees.

COUPLINGS

115. Couplings shall be of the standard, malleable galvanized type, threaded from end to end. Ends of conduit to be coupled must be cut true and square and the threads cut sufficiently long so that the conduit ends will butt, making a close joint with each other.

116. Any burr, upset or sharp inside edge of conduits must be reamed out, but the reaming must not be overdone so as to make the ends of the pipe thin.

BUSHINGS

117. Bushings of approved type shall be secured to all conduit ends, and in addition to forming a smooth, curved surface end to the conduit, clamp securely the conduit to whatever form of box or plate constitutes the terminal. All bushings to be of the insulated type.

HANGERS and SUPPORTS

118. The conduit of small sizes shall be securely fastened with ample galvanized iron clamps or clips of ample weight to hold conduit in place. In case of heavy conduit, such as 2" and above, they shall be supported by wrought iron rods, clamped to the steel structure. Riser conduits shall be supported at each floor level by approved wrought iron U-clamps.

119. Strong angle iron construction supports shall be used to hold in place all power, distribution and circuit panels, junction and pull boxes.

Electrical
Metropolitan Square.
Theatre #10.

120. These boxes are to be independently supported to the building structure by suitable angle iron framing so that they will rely entirely on the supports and not upon any conduits entering same.

121. Parallel conduits may be grouped together for common support, as approved.

SWITCHES

Knife Switches:

122. All knife switches where required in the Electrical Systems, except branch switches on lighting panelboards, shall be of heavy construction built of cold rolled or drop forged copper of not less than 98% conductivity. Current densities shall be not less than 1000 amperes per sq. in., of sectional area, 150 amperes per sq. in., fixed contact surface, and 50 amperes per sq. in., moving contact surface, based on the amperes capacity given in tables on drawings, or in specifications.

123. Hinges of all switches shall have heavy screw pins and nuts with set screws or approved rivets and heavy slotted spring washers.

124. Blades and jaws shall be properly beveled and chamfered where they first make contact and all jaw and hinge laminations shall be sweated and pinned to blocks. A sample of 200 ampere, 2 pole, back connected switch shall be submitted to the Architects and approved by them before switches for the contract are made.

125. Switches shall have heavy fibre cross bars and reinforced maple handles all finished black and polished. Cross bars shall be slotted for blade blocks. Blade blocks shall be forged on blade and shall be milled for blade and sweated and pinned thereto.

126. The clips and blades shall be of sufficient size, and thickness, to prevent the possibility of their getting out of alignment and from getting bent from use.

127. All polished portions shall be thoroughly lacquered and after connections have been made, the lugs shall be cleaned and lacquered.

Local Switches:

128. All local wall switches shall be 20 ampere 125 volt single pole tumbler type, with composition base. Where switches occur on columns or walls combined with receptacles they shall be arranged for mounting in a one gang box, with 20 ampere 125 volt tumbler switch and 15 ampere 125 volt receptacle in common base, with receptacle connected on hot leg independent of switch. Key operated switches shall be provided for all public rooms and where indicated on plans and shall be of same type and capacity as specified for Toggle Switches.

Insertion Receptacles:

129. All insertion receptacles shall be of composition base and at least 15 ampere 125 volt capacity. Plugs shall be furnished for half the number of insertion receptacles.

Switch and Receptacle Plates:

130. All switch plates shall be moulded plain wall plates for painting.

131. In all cases excepting service quarters, where two or more switches are shown together they shall be grouped in a common plate arranged in tandem.

132. Base receptacle plates and other box covers for equipment on wall shall be similar to the switch plates.

133. All plates will be painted, of finish as directed, by Others, and as per samples obtained from the Architects.

134. Cleaners receptacles indicated on Plan C shall be heavy duty 20 ampere 250 volt with special approved twist lock type plugs and cable grips.

HOSE REEL RECEPTACLES

135. Contractor shall install in each hose reel cabinet, a standard outlet box with lamp receptacles and wire guard. Same to be located where directed and connected to the nearest "E" circuit.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Hardware:

136. All hardware shall be of solid milled brass unless otherwise specified. All locks shall be paracentric type of "Yale" or "Corbin" make, unless otherwise specified.

137. All keys alike, all hinges shall be of brass, butt type with removable pins and shall be concealed as far as possible.

Floor Boxes:

138. All floor boxes shall be of waterproof type standard manufacture, complete with plug and solid brass floor plate and nozzle, as approved by the Engineer.

Outlet Caps and Blank Plates:

139. Install blank plates on all outlet boxes in which no apparatus is installed or in which apparatus is installed which does not in itself provide a cover for box. This does not apply to ceiling fixture or wall fixture outlet boxes. Blank plates shall be attached by means of bridges with slots for adjustment, or holes for screws shall be drilled and tapped on the job, as directed.

Elevators:
Pent Houses and Machine Rooms:

140. For each bank of elevators supply the following equipment and turn same over to the Managers: (Four Required)

One (1) attachment plug.
30 feet of No. 16 B & S "Canvasite" cord.
One (1) hook handle with lamp cage.
One (1) lamp with socket and stationary hook.

Elevator Cars:

141. Supply and install approved elevator outlets in each passenger elevator shaft a little above the center of travel of each elevator. The Contractor is not to furnish or to install the swing cable, car fixtures or car system. Boxes shall be especially designed and located for this purpose in accordance with the directions of the Elevator Contractor and to the satisfaction of the Architects, so that swing cable may be properly anchored

therein by the Elevator Contractor. Under each car provide light in connection with the circuit in the car.

Tank Switches:

142. Furnish, install and connect up complete, the conduit, wiring, outlet and junction boxes from all switches in Basement and Pent House tanks to starting boxes of all house pumps. Each pair of tank switches to be wired so that they can operate separately or together.

143. Furnish, install and connect up complete the conduit and wiring, outlet and junction boxes from all Selsyn float alarm switches in suction tanks and sump pumps in Basement, and House and Fire Tanks in Pent House to the gong panel in Machinery Room in Basement.

144. The alarm gong panel, Selsyn and tank switches will be furnished by Others, but this Contractor shall mount and connect up this equipment and test out ready for operation. Gongs shall operate on 120 volt alternating current.

Condulets or Unilets:

145. If any type of "condulet" or "Unilet" is desired to be used by the Contractor at places where conduit installation is difficult, permission shall be obtained from the Engineer. This does not apply to outlet or junction boxes; they shall be as specified.

Hand Driers:

146. Furnish and install in all public toilet rooms where indicated on plans duplex floor or wall receptacle, 20 ampere 250 volt, with plugs and plate of finish as directed.

PANEL BOARDS

Sample Panel:

147. Previous to making up of panelboards, the Contractor shall make one sample panel which may be used in the building, as a sample to be approved. The number and capacity of all

panels, circuits, remote and manual switches and fuses shall be as called for on plans.

148. The panelboards shall be of the 20 ampere 250 volt single pole tumbler switch plug fuse dead front type, with doors and trim.

149. Panels with fuses only in the branches shall be built dead front construction and arranged for plug type fuses.

Copper:
Conductivity:

150. All copper for bus-bars, circuit bars, switches and copper parts carrying current shall be made of pure copper of 98% conductivity.

Drawn Copper:

151. All bus-bars, circuit bars and all current carrying metal parts except fuse clips, shall be made from pure drawn copper bars.

Milled Copper:

152. All cable connecting lugs, binding posts, grilled nuts, screws, shall be machined, not stamped, from pure drawn copper bars.

Bus-Bars and Lugs:
Proportioning of Parts:

153. The bus-bars and lugs shall be proportionate on a basis of 1000 amperes per sq. in., maximum current density. The surface contact for lugs shall be on a basis of 100 amperes per square inch.

Clearances:

154. The bus-bars and lugs shall be raised above the cross bars to the proper distance required for 120 volt alternating current pressure. The ends of circuit bars shall extend to within 1/4" of panel lining.

Electrical
Metropolitan Square
Theatre #10

Fuses

155. Furnish and install a complete set of fuses, and furnish 25% additional in original packages. Plug fuses to be "Trico" clear top and cartridge fuses "Trico" renewable.

Directories

156. A typewritten list of circuits or photostat of ciruit wiring, properly numbered, showing clearly the points supplied by each circuit shall be installed on the inside of each panelboard door. This list shall be mounted in a copper frame, under glass.

Stencil Box

157. Mark on the outside of doors and boxes with paint, stenciled letter or number, as directed.

Manufacture:

158. Panelboards shall be of manufacture as approved by the Engineer.

159. Main switches listed for these panels shall be heavy duty, safety type construction and quick break.

160. Main magnetic switches shall be Sundh Bulletin #7200 or approved equal with tripping and closing coils.

PANEL CONTROL

161. All momentary contact switches and indicating lamps for the control of panels having magnetic switches shall be mounted on a common flush panel located in the Lobby panel closet.

SPECIAL FIXTURES

162. Special outlet boxes and receptacles shall be furnished and installed at each outlet indicated on plans by a circumscribed "R".

163. These boxes shall be equipped with heavy iron guards rigidly supported to the receptacle cover plate in such a manner that they may not be removed without removing the outlet cover.

Electrical
Metropolitan Square
Theatre #10.

164. These units shall be Russell & Stohl #3380 for surface type and #3381 for flush type with adapter plates for four boxes.

165. Special outlets indicated by circumscribed"V" or "W" shall consist of a vaporproof globe and lamp receptacle complete with guard as manufactured by the Vecoo Company, South Norwalk, Conn.

166. Furnish and install where indicated in Spot and Projection Booths, Appleton approved "Reelites" complete with 20 feet of cord and wire guard portable fixture.

PLACING OF WIRE and CABLES

167. No wires shall be pulled until after all conduit and outlet boxes are permanently in place and until permission is given by the Architects in writing. No fish wires or strings shall be inserted before conduit is installed.

168. Powdered soapstone only shall be used as a lubricant where necessary.

Tagging of Wire and Cables:

169. Where two or more circuits run to or through a single outlet box, each circuit shall have a linen tag as a guide to the Fixture Contractor in making fixture connections. All feeders and mains shall be tagged in all pull boxes and in the gutter of all panels to which they connect. Such tags shall be of linen with the feeder and polarity stamped thereon.

Circuit Ends:

170. All wires to be left sufficiently long at ends for convenience in making connection with fixture wiring, sockets, receptacles, motor lugs and cut-outs.

Number of Wires in Conduit:

171. The number of wires in each conduit are generally shown by symbols on plans.

PLACING OF CONDUIT

172. In general , all branch conduit shall be run concealed eliminating as far as possible, unnecessary cutting or chasing of the rough structure and in no case shall conduit

intended to be concealed show through or cause a crackling of floors or of finished portion of the building.

173. No horizontal or cross runs in partitions or side walls will be allowed.

174. All exposed conduits shall have a neat workmanship and grouping and parallel conduits either exposed or in chases shall be equi-distant both in horizontal and vertical planes.

Sizes of Conduits:

175. Conduits shall be of such size and shall be so installed that the required conductors may be drawn in without injury or excessive strain. Minimum sizes of conduits except for branch circuit work are given on plans or in tables. Conduit for 4 - No. 14 or No. 12 single conductors shall be at least 3/4" and for 6 - No. 14 or No. 12 single conductors shall be at least 1-inch. Conduits for circuit work less than 3/4" will not be allowed.

Conduits in Floors:

176. All conduits for receptacle circuits, telephone and floor outlets, as well as junction or strip boxes shall be run in the floor fill in such a way that there shall be no crossing of conduit unless absolutely necessary, and in this case, one conduit shall be bent under the other so that the two conduits at the crossing point shall be no higher than the run of one conduit. Conduits for ceiling outlets with the switch legs for control of same shall be run in floor arch except where hung ceilings occur, where the home run will be in the arch and circuits continued on ceiling frame work.

Conduit Anchorage:

177. Conduits shall be sufficiently braced or anchored to properly resist displacement when wires are being pulled.

178. All conduits where they enter panel boxes, pull boxes, support boxes or outlet boxes shall be secured in place by galvanized lock nuts and bushings.

Conduit Plugs:

179. Plug each end of conduit with approved capped bushing as soon as placed, to prevent filling with foreign material. All conduits shall be dry and clean before wires are pulled into them.

Heat:

180. Conduit shall not be installed in close proximity to any steam pipe or other heated duct or appliance. In no place shall a conduit be run within 3-inches of such pipes except where crossing is at least 1-inch from the covering of the pipe crossed.

Conduit Tubes and Fittings:

181. Conduit tubes and fittings shall be carefully examined and all pieces having blisters or other defects shall be rejected and not used on the work.

PLACING OF OUTLET BOXES

General:

182. Special care shall be taken to set all boxes correct, square and true with the building finish. The edge of the cover shall come flush with the plaster or other finished surfaces. As far as possible all wall and switch outlets shall be erected in advance of furring and fireproofing and shall be secured to the building structure or steel by adjustable strap iron supports which shall be buried in.

Location:

183. The exact location of all outlets and switches in finished rooms shall be obtained from the Architects and from the scale drawings of interior details and finish, and final correct readjustment made of boxes if necessary to give proper centering.

184. In centering outlets the Contractor is cautioned to allow for overhead pipes, ducts and other mechanical systems and for variations in arrangement and thickness of fireproofing

and plastering; also for window strip, paneling and the like, and any inaccuracy resulting from failure to do so must be corrected by the Contractor without expense to the Owners.

185. The Contractor is especially notified that the locations given or designated on the plans for the local switches are subject to modifications. In the case of local switches to be set at or near the doors, the definite location may be modified by the changes in the location, arrangement or swing of doors. In all cases the switch shall be on the opposite side of the door hinge. Contractor shall ascertain and note all such changes.

Heights:

186. The heights of all wall fixture outlet boxes shown on the Architects' details, shall govern. Insertion receptacle outlets in the machinery portions shall be 3' above the floor. All other insertion receptacle outlets shall be located above the baseboard of height 14-inches from finished floor, except where otherwise noted, indicated or directed on the plans or details, where they will be set as shown. Receptacles in public rooms shall be located in the baseboards unless otherwise indicated on the Architect's detail. All switch boxes and combination switch and receptacle boxes shall be centered 4'-6" from the finished floor.

Special:

187. Where special conditions exist, the outlets for such shall be as directed by the Architects and shown on plans.

SUPPORTS

188. Outlet boxes shall be securely fastened. Hangers used to support ceiling outlets except in hung ceilings shall be T & B make with key, or 1/2" pipe and tee, pin and long cross bar above the floor beams. All such hangers shall be galvanized.

189. Hangers for outlets in hung ceilings shall consist of channel iron hangers equipped with T & B prong fixture stud. For large fixtures furnish special supports consistent with the weight of such fixtures, as approved.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

PLACING OF LOCAL SWITCHES and INSERTION PLUGS

190. Local switches shall be installed in such a position that they shall bear evenly and truly and be secured on the axis of the supporting members.

191. Under no circumstances are wooden wedges, shims or blocks to be used in trueing up local switches. Should the outlet box, in any case, come too far back of the finished surface extension sleeves and screws of the proper length to reach box shall be used and each shall have either a brass ring or a length of brass tubing of such size as to form a shoulder at exactly the proper point to retain the switch in position.

JOINTS

For Conduits:

192. All joints shall be made liquid and gas tight, and the pipe thread before connecting up must be thoroughly filled with white or red lead, before screwing together. The outside of each coupling, joint and adjacent conduit must be painted with approved moisture-proof iron preserving, insulating paint. This paint also to be used to cover any iron in this System from which the coating has been separated or removed. Running threads are absolutely prohibited; use joints similar to Steel City "Universal" joint where required.

In Wire:

193. All standard conductors shall be furnished with finished forged and milled copper connecting lugs, drilled or reamed the full diameter of the bare conductor. All lugs for wires or cables larger than No. 2/0 shall have two stud bolts with heavy copper washers. No joints or taps in feeder will be permitted under any conditions, except taps from riser feeders to panelboards.

194. In all pull boxes and cable support boxes each conductor of each feeder shall be taped with asbestos tape and then painted with silicate of soda. Approved cable racks shall be installed in pull boxes as directed.

195. Joints in stranded conductors shall be made using a tinned clamping joint similar to "Dossert". All strands must be

Electrical
Metropolitan Square
Theatre #10.

cleaned and tinned separately and cables must abut in the center of the sleeve. Joint to be then sweated and soldered, insulated, taped and painted.

196. Joints in branch circuits shall occur only where several circuits divide as shown on the plans, and shall then connect to one through circuit to which shall then be spliced the branches of this circuit. In no case shall joints in branch circuits be left for the Fixture Contractor to make.

197. Joints in branch circuits in solid conductors shall be made with connectors similar to "Ideal".

LOSS

198. There shall not be a loss of more than five (5) volts in the wiring system when all lights are in use. This loss shall be divided, as follows:

1. Loss from switchboards to lighting panels throughout the building not over three (3) volts in any feeder.

2. Loss from any lighting panel to any building light outlet not over two (2) volts in any branch circuits.

Note: The test shall be made after the lighting fixtures have been installed and are in position.

3. Wires: All wires and cables indicated on plans are minimum in size.

LEAKAGE

199. The insulation of the circuit work from the main switchboard to any outlet, shall be made sufficiently perfect in any circuit or branch under full pressure load to prevent a leakage therein, as shown on ringing through a 50,000 Ohm resistance magneto.

200. Any defect in insulation or ground shall be repaired.

Electrical
Metropolitan Square
Theatre #10.

TESTS

201. Contractor shall make resistance and ground tests of all wiring by means of voltmeter or other approved apparatus during the progress of the work, and at such times as the Architects may desire.

202. These tests shall be made previous to installing of lighting fixtures and in the presence of the Architects or an authorized representative.

POWER SYSTEMS

General:

203. The power feeders from the switchboards to all motors, panel and control boxes and circuits connected thereto, are to be separate from all the lighting work. The feeders shall start with connecting lugs to the switches on the switchboards and shall distribute therefrom the electrical energy to the various panel boxes, starting boxes and motors throughout the building. The general rule shall be that every motor or electrical apparatus shall have separate controlling devices for each motor.

Motor Connections:

204. Contractor shall obtain from the Plumbing, Heating, and other Contractors, all necessary information regarding motors, controls and wiring connections of apparatus furnished by these contractors. This Contractor shall furnish and erect all necessary wiring and conduit required and connect up and test out ready for operation, regardless of type or characteristics all such equipment.

Wiring:

205. All wiring shall be in conduit with "Unilet" terminals with helical coil wire and lugs at motor connections.

206. Where controls and motors stand free on floor in Machinery Rooms, the conduit shall be racked on ceiling except as indicated in motor-generator room.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Controls and Starting Equipment:

207. The Heating, Plumbing, Stage Rigger and other contractors supplying apparatus on which there are motors - with the exception of the passenger elevators - will supply and deliver to the Contractor all starting boxes under their contracts and the Contractor shall erect all such starting boxes.

208. The starting equipment shall be set as close to the motors as conveniently possible and the necessary iron frame work for erecting such equipment shall be furnished by this contractor as directed by the Engineer.

APPARATUS

ENGINEER'S DRAWINGS

209. The Engineer's drawings issued with these specifications and showing the layout of the Electrical Systems are as follows:

E-01	Sub-Basement Plan
E-1	Basement Plan
E-2	Orchestra Plan
E-3	Plan of 1st Mezzanine
E-4	Plan of 2nd Mezzanine
E-5	Plan of 3rd Mezzanine
E-6	Projection Booth Level
E-7	Attic Plan
E-8	Studio Plan
E-9	Roof Plan
E-10	Detail Main Ceiling Coves
E-11	Main Ceiling Perforations and Mezzanine Soffits
E-12	Stage Switchboard Schedule
E-13	Stage Switchboard Detail
E-14	Main Distribution Switchboard and Panels
E-15	Electrical Details
E-16	Electrical Riser Diagram
E-17	Basement Plan (Low Tension)
E-18	Orchestra Plan (Low Tension)
E-19	Plan of 1st Mezzanine (Low Tension)
E-20	Plan of 2nd Mezzanine (Low Tension)
E-21	Plan of 3rd Mezzanine (Low Tension)
E-22	Projection Booth Level (Low Tension)
E-23	Studio Floor (Low Tension)

MAIN FEEDER DISTRIBUTION SWITCHBOARD

210. This Contractor shall furnish and erect completely wired a dead front totally steel enclosed safety type feeder distribution switchboard. The switchboard shall consist of the indicated number and type of switches, circuit breakers and the like, all in accordance with the layout and schedule indicated on Drawing E-14.

Construction

211. The switchboard shall be of the free standing type and shall consist of an integral assembly composed of interchangeable standardized unit sections.

212. The sections shall consist of an angle iron frame, adjusted to the interchangeable mounting of switches on the front and having the rear accessibly enclosed by a steel door secured by a three-point chute bolt lock.

Frame Work:

213. The frame work of each section shall be built of 2" standard angles, bolted and welded together to form a complete free standing structure.

214. The frame work shall be provided with adjusted levelling bolts and the required floor channel irons.

Cable Transfer Boxes:

215. Furnish, erect and connect up complete over the entire length of the switchboard a transfer junction box of approximate size as indicated, to provide for the introduction of all lighting and power feeders and supply cables.

216. The cables are to have asbestos type covering over the specified insulation and shall be mounted on porcelain insulated supports.

217. This transfer box shall have ample access doors so that any portion of this box can be quickly accessible. The box shall be built of furniture steel not less than #10 gauge, securely held together and braced.

Switchboard Enclosure:

218. All enclosing plates shall be made of #10 gauge, cold rolled furniture steel, bolted to the frame work with no wide joints visible. The entire enclosure and transfer box shall be Parkerized finish of a Verdi Antique color.

219. The entire enclosure shall be provided with ornamental louvers, symmetrically located to provide proper ventilation for both the switchboard and transfer box.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Switches:

220. The switches shall be of the externally operated fusible safety type of unit construction and adapted for interchangeable mounting on the switchboard frame work.

221. The switches shall be of approved construction. The fuses shall be mounted in a separate compartment, accessible from the front of the board and to be so interlocked with switch operating mechanism as to prevent access to the fuses while "alive".

222. Each switch shall be provided with a neat engraved name plate and shall also be provided with means for testing and inspecting fuses while in closed position.

223. The switches shall be quick break and double break so as to disconnect the fuses

224. All switches shall be mounted on self-lining guides and shall be of Type A construction.

225. Theyo shall be made of hard drawn 98% conductivity copper of not less than 100 amperes in capacity.

Circuit Breakers:

226. The circuit breakers indicated on the Switchboard Drawing shall be built by the I.T.E. Company and arranged for full dead front construction.

227. The circuit breakers shall be mounted in an insulated compartment so that they can be easily accessible for inspection and provided with a lock to prevent unauthorized access or tampering with the calibrator. The operating handles shall extend through slots in the face of the board and shall have an indicator for "On" and "Off" position.

228. The circuit breakers shall be equipped with "Auto-Dalite" non-closible on overload features, of type indicated on the schedule.

229. The power breakers shall be 3-pole, 3-coil rigid arm and the lighting breakers shall be 3 single pole, 3-coil type for separate operation on each phase.

Electrical
Metropolitan Square.
Theatre #10.

CLYDE P. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Connections:

230. The design of the switchboard connections and the construction of the wiring system at the switchboard shall be such as to make the least complication of crossings and present a neat workmanlike appearance.

231. The bus bar work shall run in as open, straight and simple a manner as possible and be independently supported from the switchboard frame upon insulators resting on heavy steel braces.

232. The connection of the bus to the cables shall be of heavy milled copper lugs. The contact portion of the joints shall be thoroughly tinned and all exposed parts cleaned.

233. Rigidly supported copper bus bars shall extend from the switch terminals to the top of the board, terminating in copper lugs on an insulated rack for connection to the feeders. Similar extensions shall be provided on the power section feeders and rise from the trench below.

Current Density:

234. The bus bar sizes shall be obtained by allowing the current density under maximum indicated load not to exceed 1000 amperes per square inch cross section area and at joints not to exceed 100 amperes per square inch surface contact.

235. All bus bars, joints or other connections shall not exceed more than fifteen (15) degrees above the surrounding atmosphere under full load.

Drawings:

236. The Contractor shall submit for approval total dimension drawings of the switchboard showing front elevations and cross sections; also bus bar layout with sizes.

Protection:

237. The switchboard and all its mountings shall be carefully protected during erection by suitable wooden partitions and cloth covers.

Manufacture:

238. The switchboard shall be of manufacture approved by the Engineer and as provided for under section entitled "Proposals" of this specification.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

239. The United Electric Light and Power Company will enter from 51st Street with high tension 13,800 Volts, 3 phase, 3 wire feeders and step down the voltage through five (5) transformer banks to the following secondary characteristics for building usage:

Light - 3 phase, 4 wire 120/208 Volt, 60 cycle Alternating Current.
Power - 3 phase, 3 wire, 208 Volt, 60 cycle Alternating Current.

240. The connected loads for light and power shall be divided into five (5) groups, three (3) for power and two (2) for light as indicated on Drawings E-01, E-14 and E-15.

241. The secondary cables and necessary connections between the transfer vault and the main distribution switchboard shall be furnished by this Contractor, completely installed in rigid conduit as indicated on the above mentioned drawings.

242. All wiring to the lighting and power meters, indicated on the switchboard assembly, together with the necessary current transfer mountings, shall be done by this Contractor, meters being furnished by the Lighting Company.

243. Wiring shall also be done to the temporary totalizing meter located in the distribution switchboard room.

244. This Contractor shall furnish and install, as per the Lighting Company's requirements, the necessary tie-in conduits as indicated on the United Electric Light and Power Company's Drawing No. 9400, which forms a part of this specification.

245. The Emergency Lighting Service and the Fire Pump Service shall not be controlled by the main light and power circuit breakers but shall be connected to the service in accordance with the requirements of the departments having jurisdiction.

POWER PANELS

246. The Contractor shall furnish and erect, completely wired, all power panels as indicated on Drawing E-14 and connected

up completely to all motors and their respective controls as shown on the floor wiring plans.

247. The panels shall be of dead face construction and shall be such that no fuses are accessible until the circuit is "dead".

248. The circuit sections shall be of interchangeable moulded units containing both switch and fuse, of sizes as indicated in the schedule.

249. Main and branch bus bars shall be of hard drawn copper, similar to that specified for the main distribution switchboard.

250. Provision shall be included so that the fuses can be tested when the circuit is in the "On" position. No current carrying parts shall be exposed when the switch is in the "On" or "Off" position.

251. All parts shall be replaceable from the front of the panel without disturbing any of the adjacent sections.

252. All circuit sections and caps shall be supplied with card holders and indicators.

253. The cabinets enclosing these panels shall be of cold milled steel and set true, plumb and symmetrical. The cabinets shall be large enough to permit a wiring gutter of not less than 4". The cabinets shall be flush type where possible and furnished with doors and trims. Doors shall be equipped with flush locks and latches.

254. The power panels shall be of the Bull-Dog Unit-Versal and Saftifuse or the Trumbull "ConverTiFuse" manufacture.

POWER SWITCHES

255. This Contractor shall furnish, erect and completely connect the power switches as indicated on the Schedule of Power Switches shown on the Electrical Drawings.

256. The "U-Re-Lite" breakers shall be of the "Auto-Dalite" type, 3-phase, 3-coil, non-closible on overload. Where these breakers are indicated in groups supplied by one feeder,

same shall be furnished complete with main bus bars, connections and angle iron frame work. These groups are indicated in the schedule of "Urelite" Power Panels.

257. The safety switches shall be externally operated, of Class A construction and three-pole fused.

MISCELLANEOUS POWER CONTROL WIRING

258. The following miscellaneous control features shall be included in the estimate of power wiring and shall be as approximately indicated on the Wiring Plans:

259. Electrical temperature recorders with wiring between the Projection Room Level fan room and the Basement Lounge.

260. Radi-Ion machines and relays at Projection Room Level Fan Room.

261. Tank float switches in roof tanks, cooling towers, basement tank and sump pits.

262. Selsyn level indicators in roof house tanks and indicating signals for high and low air pressure at Basement.

263. Hydraulic valve control.

264. Fan Indicating Board in basement to fans as shown.

265. Fan remote control.

266. Electric pneumatic switches in Refrigeration Room.

267. Emergency break-glass stations for Refrigeration Room.

268. Motor and solenoid valves.

269. Pressure Reducing Valves.

LIGHTING PANEL BOARDS

270. All lighting panels shall be safety enclosed type construction, equipped with the necessary 3-phase, 4-wire bus bars and the required 2-wire solid vertical branch circuits emanating therefrom.

271. Quantity of circuits is indicated on the panel board schedule shown on Drawing E-14 and shall be connected as diagrammed on the Electrical Plans.

272. All branch circuits shall be constructed as hereinbefore specified and equipped with fuses.

273. The magnetic switches specified for circuit panels shall be of the latched-in type with tripping and closing coils and shall be furnished complete with opening and closing momentary contact switches and bulls-eye indicating lamp stations for remote control.

274. These stations shall be located in the lobby panel closet and shall be combined on one common panel with suitable name plates, flush trim and doors with lock and keys.

275. The drawings for the panels shall be submitted for approval before being manufactured.

276. Lighting panel "EM", indicated on the schedule as shown in the main distribution switchboard shall contain the circuits in connection with lamp signals, inter-telephones, time clocks and the like. This panel shall be connected ahead of the main lighting circuit breaker as directed.

STAGE SWITCHBOARD SYSTEM

277. This Contractor shall furnish and erect, completely wired, the stage switchboard control system where shown on the plans.

278. This equipment shall be of the "Electronic Tube" type and shall function as described herein to the satisfaction of the Managers, Architects and Engineer.

279. The equipment shall consist of a special designed control board, Selsyn color control system, reactors, tube units, booster transformers and complete wiring.

280. The system shall be equipped for dual operation consisting of a "pre-set selector control" and a rehearsal control.

281. The "pre-set selector control" shall provide means for pre-setting at least five (5) multi-color scenes in advance of their presentation and to include means for varying the illumination intensity simultaneously with any and all of the pre-set scenes.

282. The control shall provide means for proportional dimming and dimmer reverse motion. The rehearsal control shall

provide switch and dimming for independent color group and color combination operations.

283. It shall be possible to super-impose one scene upon another without electrical or physical interference.

284. Switches shall only be used to select either direct or master control for the circuit as well as individual or preset control. The scene setting intensity controls shall perform the function of setting of intensities and switching "on" or "off" circuits as one operation.

285. The necessary switching for the tube filament circuits shall be included on the console control board for each reactor group.

286. All intensity regulations shall be accomplished without the use of sliding contacts.

287. When the intensity control handle is in the "up" position, the lights shall be bright for the scene and when the handle is in the "down" position the lights shall be out for the scene. If the handle is at any intermediate point, the lights shall have a corresponding intensity for the scene.

288. Means shall be included for extended control of the dual systems.

Control Board:

289. The control board shall be of the Console type construction, similar to that as shown on the plans.

290. This board shall fit into a recess 15'-6" in length and 5'-6" in width, allowing sufficient space at the front for practical operation. The height of this control board shall not be greater than 5'-1".

291. The control board shall consist of an assembly of removable 1/8" thick furniture steel panels and the equipment mounted thereon shall be so connected that the wiring may be accessible from the front of the board without disturbing the system. The panels shall be Parkerized and finished in an approved color.

292. Each unit shall contain means of pre-setting five (5) complete scenes on the stage in advance of their operation and five (5) complete pre-sets for the Auditorium.

Electrical
Metropolitan Square.
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

293. Each pre-set shall be capable of being set for any intensity and shall embody indicators with ten (10) graduations.

294. Each unit shall also be provided with an independent or rehearsal control and all necessary transfer switching arrangements to transfer from independent to group control and from individual to selector Master control.

295. Each unit shall also have an indicating lamp which shall be connected to the fuse center of its respective circuit.

296. The center section of the control board shall be known as the Master Section on which shall be located the various scene selectors, black-out and fader controls, etc., all as indicated on the Switchboard Schedule.

297. The Console Board shall be provided with lighting troughs on the face to furnish sufficient illumination to permit clear reading of all its features.

298. The operating handles of all switches, dimmers, Selsyn levers and pilot lights shall be of corresponding colors to the lights controlled. All white lights shall be of very low intensity.

299. It is important that the dimming of lights, either up or down, shall be accomplished in an approved manner and shall be free from all jumps or lags.

300. The Console Board shall be completely wired to terminal racks consisting of the required number of ebony asbestos or equally approved terminal blocks on which shall be mounted proper terminals for external connections.

301. All connections shall be neatly made and properly tagged for identification.

302. It is the intention of these racks to have the terminal board furnished as a complete wired unit and avoid unnecessary assembling at the building.

303. Similar terminal racks shall be furnished for the reactor equipment hereinafter specified.

Selsyn Section:

304. The Selsyn section shall form a part of the Master Section and is to consist of an approved arrangement of eighty (80) switches, pilot lights and Selsyn generators arranged as shown on plans and schedule.

305. The generators are to be mechanically connected to individual interlocking handles in four (4) color groups.

306. Each color group shall be equipped with a Master lever and all Master levers are to be interlocked into a grand Master lever or wheel.

307. The mechanical connection between the operating levers and the generators must be such that the arc described by the individual generator levers will impart the required rotation to the generators which are electrically synchronized with color screens on the stage lighting equipment.

308. The arrangement of the mehcanical connections shall be such that they will afford easy operation.

309. The generators and connections to these levers shall be mounted within the space provided for in the detail and the arrangement and mechanical operation shall be satisfactory to the Engineer.

310. The operating levers shall be substantially built and shall be similar to the standard resistance dimmer interlocking arrangement.

311. The generators and connecting links shall be accessible from the front and rear of this section.

312. The switches in this section shall be connected to the excitation panel and furnish the necessary excitation current for each generator and its respective motors.

313. The indicating lamp shall indicate the "On" position of the exciter switches.

314. This Contractor's attention is called to the additional space beneath the operating platform which can be used for extensions in connection with the Selsyn interlocking system.

Reactor Equipment:

315. The reactors are to be assembled and mounted on a structural steel frame, consisting of vertical sections to accommodate five (5) such units. The reactors shall be of approved design and shall be built in accordance with the

standards of the A. I. E. E. for temperature, insulation and the like. They shall be air cooled and designed to operate continuously at a 10% overload without exceeding a temperature rise of 55 degrees C. above surrounding air.

316. The reactive voltage drop across the reactors shall not exceed 4 volts when operating at their full rated load.

317. Each reactor unit shall consist of the reactor, enclosed contactor and dead front constructed fuse section for branch circuits as well as the necessary tube units, all as listed in the schedule.

318. There shall be four (4) reactor assemblies required - one at the Basement and three (3) at the Attic.

319. The circuit wiring to each of these assemblies shall be so arranged that separate conduits shall supply each tier of reactors. (Five Units) Metal vertical ducts shall extend along the side of each tier for circuit connections.

320. The main supply bus shall extend along the bottom of the reactor assembly or other approved location and all necessary bus work and connections between the reactors shall be furnished by this Contractor.

321. Approved supports shall be furnished for the bus work and where any such work is exposed same shall be protected against mechanical or physical injury.

322. The arrangement of these reactors shall be indicated in later detail prepared by the Engineer and will include an assembly that would group all corresponding controls together.

323. It is the intention to have each tier contain lighting controls for each center.

324. The contactors shall be suitable for mill duty and shall be quiet operating, of sizes and quantities as indicated in the Schedule.

325. The circuit fuses shall be adjacent to the contactor and connected to the contactors with the necessary bus bars. Terminal racks for external connection shall be provided.

326. The entire unit shall be accessible so that any part can be removable without undue difficulty.

327. Each reactor tier shall be provided with silencing domes so that no vibration can be transmitted to the building. A complete grounding system shall be provided.

Booster Transformers:

328. Each of the four reactor assemblies shall be equipped with Booster transformer, or other accepted method of boosting, complete with necessary switching and connections. These transformers are to be installed adjacent to the reactors in space provided for on the plans and shall be designed for a primary voltage of 120 volts and four (4) secondary voltages from 124 to 130 volts inclusive.

General:

329. The necessary control wiring between the reactors, contactors and the control board shall be completely furnished by the Contractor and the arrangement of the conduits shall be as directed by the Engineer.

330. For reasons of simplicity, this wiring is not included on the plans but Contractor's attention is hereby called to this requirement.

331. In addition to the extended controls hereinbefore specified, an additional control shall be provided that will permit the operation of the Auditorium amber lighting from the rear Orchestra and the Projection Booth to a full intensity regardless of the pre-set arrangement. This feature shall be known as the "panic control" and the switches shall be of special design to avoid tampering.

332. All terminal blocks shall be of the type manufactured by the Terminal Block Company or approved equal.

333. The schedule of the complete switchboard control system is indicated on Drawing E-12.

334. In addition to the tubes required for the operation of the stage switchboard, this Contractor shall furnish, for future use, a quantity of ten percent (10%) of each type of tube in use.

35. This Contractor shall also furnish, for future use, the following items:

a. Twelve (12) Contactor Coils.
b. Thirty-six (36) Pilot Lights.

STAGE BORDER LIGHTS

36. All border lights indicated on plans shall be furnished, installed to rigger supports and completely wired and connected by this Contractor.

37. These borders shall consist of an all metal trough made to the specified lengths and shall contain the indicated quantity of "Oakite" finish aluminum reflectors of size suitable for lamps as shown.

38. All reflector units shall be of special design, suitable for close-up curtain lighting with the maximum beam intensity downward. Design should also embody the maximum parallel spread to avoid scalloping when scenery hangers are located 12" from the lighting unit .

39. The borders shall be so constructed that they shall be absolutely light tight and thoroughly ventilated. They shall be provided with rings for color roundels and grooves for glass color screens.

40. The design and construction of the borders shall be made to conform to the requirements of the Fire Underwriters, the Departments having hurisdiction and to the satisfaction of the Engineer.

41. All wiring for the borders shall be of the size corresponding to that specified in the cables and shall be asbestos covered.

42. The circuits shall be carried straight across the border from end to end and the various lamp groups must be placed accordingly.

43. An improved splicing box, equipped with a substantial cover, shall be provided at the stage prompt end for connecting the wire to the border cable.

344. The Contractor shall submit to the Engineer a complete set of detail drawings showing the detail of construction, wiring and arrangement of units before any of this work is placed into manufacture.

345. Each border shall be furnished complete with removable bottom wire mesh, side guards and chain hangers.

346. Sectional covers shall be provided, which shall be readily removable to permit access to wiring.

347. All border circuits shall be color coded to conform with the lights controlled.

Border Light "C"

348. This border is to be located at the Proscenium Arch and is to be made up into 4'-0" sections, all as shown on the plans and details.

Border Lights "D", "E", "F", "G" and "K":

349. These borders have no special features other than those included in the specifications. Border "D" and "K" shall each be wired and equipped with two (2) 25 Amp. built in pin plug connectors.

Border "H":

350. This border shall conform to the general specifications with the addition that the units are to be designed with a light distribution curve that will make it possible to obtain even illumination on the cyclorama on three levels evenly divided into the height of the cyclorama.

351. This border shall have three (3) rows of reflectors, each row illimunating one-third of the cyclorama.

352. The units shall be equipped with metal frames for glass and gelatin screens.

BRIDGE, SPOT and FLOOD LIGHTING

353. At each of Bridges "C", "E", "F", "G" and "H", as shown on plans, this Contractor shall furnish complete wiring for the spot and Selsyn control flood lights. Bridge "C" will

be fixed and all others rigged by Others.

354. This Contractor shall furnish and install, as directed, on these a No. 20 gauge wiring trough of suitable section, wired and equipped with 25 ampere separable pin plug connectors for lighting circuits of the spot and flood units.

355. An additional trough of suitable section shall be furnished and installed, completely wired to special 20point separable pin plugs for the Selsyn motor equipment on the flood light units.

356. The Selsyn pin plug connectors will be furnished by Others but shall be completely connected to the Selsyn wiring strip with extra flexible stage cable by this Contractor.

357. The lighting units for these bridges shall be furnished by Others but installed in place and connected by this Contractor.

358. Bridges "C", "E", "F", "G" and "H" shall contain a 100 amp. 3 wire arc pocket completely wired as shown on plans.

BORDER and BRIDGE LIGHTING CABLES

359. Each border light and bridge, excepting the "C" border and the "C" bridge shall be equipped with lighting cables containing the number of extra flexible conductors of size and quantity indicated on plans.

360. The said cables shall be run to the gridiron where they shall be properly fastened with an approved clamp at gridiron junction panels hereinafter specified.

361. The cables shall be long enough to extend from the gridiron to within 5'-0" of the stage floor without disconnecting.

362. All border cable conductors shall be color coded for identification.

363. Each border cable shall conform with the rules and regulations of the Departments having jurisdiction and all conductors shall be made up as follows:

#12 wire to contain 65 strands of No. 30 wire.
#10 wire to contain 104 strands of No. 30 wire.
#8 wire to contain 455 strands of No. 34 wire.
#4 wire to contain 1029 strands of No. 34 wire.
#0 wire to contain 2646 strands of No. 34 wire.

BRIDGE SELSYN CABLES

364. The bridge Selsyn cables shall be similar in all respects to that specified for the lighting cables in the previous paragraph and shall contain the number of extra flexible conductors of size and quantity indicated on plans.

CRADLES

365. Each border and bridge cable shall be equipped with approved cradles and strain insulators.

366. Where more than one cable is connected to a border or bridge, the cradles shall be rigidly secured to iron saddles and the said saddles shall be furnished with proper fastening bolts for riggers cable connection.

GRIDIRON JUNCTION PANELS

367. This Contractor shall furnish and erect special junction panels at the gridiron for terminating the border and bridge cables.

368. Each panel is to contain the necessary cable clamps for relieving any strain on the connections to the cables.

369. Separate panels shall be provided for the border lights, bridge lights, D. C. arcs and Selsyn circuits.

370. These panels shall be accessible from the gridiron and shall be erected in place in a good workmanlike manner by a substantial angle iron frame work.

371. The boxes shall be painted black and identified on the doors as to the circuits connected.

372. The location of these junction panels is approximately indicated on the plans. Accurate locations will be given in a later detail.

Electrical
Metropolitan Square.
Theatre #10.

CLYDE N. PLACE
CONSULTING ENGINEER
NEW YORK CITY

FOOTLIGHTS

373. The footlights shall be made up in sections as shown on the plans and details, each section being provided with a double row of "Oakite" finished aluminum reflectors on approximately 4½" centers and furnished complete with color glass roundels.

374. The footlight enclosure is to be of the disappearing type and the operating mechanism will be furnished by Others.

375. This Contractor shall arrange for the proper mounting of these sections into movable trough and allow sufficient flexibility in the feeder cables for the maximum travel of the sections.

376. The reflectors shall be enclosed in a metal trough built of No. 20 gauge sheet steel.

377. The lamp receptacles shall be wired alternately for each color so that the circuits will extend entirely across each section.

378. Each lamp receptacle shall be fully enclosed with sheet iron and the wire shall be rubber covered of size as indicated on the plans.

379. The wiring in each strip shall terminate in a junction box at the bottom of the strip and shall be connected to junction boxes provided in the footlight recesses.

380. The baby spotlights for the main footlights shall terminate in 15 ampere, separable pin plug connectors at locations approximately indicated on the plans. These spots are to be furnished by Others but shall be installed in place as directed by this Contractor.

MUSICIANS' PIT RAIL SPOTS

381. The baby spot lights indicated in the rail of the Musicians' pit shall consist of 15 ampere separable pin plug connectors, wired as shown.

382. Brackets and mounting for these spotlights shall be furnished by this Contractor.

PROSCENIUM FLOODLIGHTS

383. This Contractor shall furnish and install in recess provided at each side of the Proscenium opening, a wiring trough of

approved section and equipped with 25 ampere separable pin plug connectors with stage cable for the lighting units indicated on the plans.

384. An additional wiring trough shall be provided for the Selsyn motors, completely wired with flexible stage cable to special 20 point pin plug connectors furnished by Others.

385. The lighting units in these recesses will be furnished by Others but shall be installed by this Contractor and arranged as shown on details.

386. All iron work for supporting of these units to be furnished by Others.

PORTAL SPOTS

387. This Contractor shall furnish and install at each side of the Proscenium opening, where directed, the portal spot light wiring similar to that specified for the Proscenium floodlights.

SIDE BRIDGES

388. This Contractor shall furnish and install the necessary conduits, troughs, condulets, fittings, pockets and cable connections for all incandescent and arc units indicated on the plans.

389. The terminals for this wiring are to be arranged at the direction of the Engineer and as approximately indicated on plans and details.

390. These bridges occur at each side of the stage and at two levels.

391. All lighting equipment and supports for same on these bridges shall be furnished by Others but shall be installed and connected in place by this Contractor.

Lower Side Bridges:

392. The following provisions shall be made at each lower side bridge (total 2)

Five (5) 150 amp. 3 wire flush floor stage arc pockets.
Five (5) 50 amp. 2 wire flush floor stage incandescent pockets.
Two (2) bracket outlets with 25 amp. pin plug pigtail connectors for work and test lights.
Five (5) cable junction boxes (#10 gauge) each complete with four (2) 2 conductor #8 wire stage cable extensions (10 ft. approximately) with 25 amp. pin plug connectors for lighting circuits.
Five (5) Selsyn cable junction boxes (#10 gauge) each complete with three 20 conductor #12 wire extra flexible stage cable extensions (10 ft. approximately) with special 20 pole pin plug connectors. Connectors furnished by Others. Furnish in each box twenty (20) one to three terminal strips to provide connections to the above extensions.

393. The above junction boxes shall receive the supply conduits and be equipped with suitable cable supports and clamps.

Upper Side Bridges:

394. The following provision shall be made at each upper side bridge (total 2)

Three (3) 150 amp. 3 wire flush floor stage arc pockets.
One (1) 3 gang 25 amp. 2 wire flush floor stage incandescent pocket.
Two (2) bracket outlets with 25 amp. pin plug pigtail connectors for work and test lights.

STAGE TOWERS

395. There will be eight (8) portable towers, located on the stage, approximately where indicated on plans, each tower being equipped with incandescent and arc light controls, all as shown on plans and details.

Electrical
Metropolitan Square
Theatre #10.

396. This Contractor shall furnish necessary wiring to these units, complete as described for the bridges.

397. The equipment will be furnished by Others but shall be set in place and connected by this Contractor.

398. Wiring for these towers shall be extended from the lower side bridge as approximately indicated on plans and details.

399. The following shall be provided at each lower bridge - (total 2)

Four (4) cable junction boxes (#10 gauge) each complete with a ten (1) conductor #8 wire extra flexible border cable approximately 75 ft. long for tower incandescent units and test circuit. Four (4) similar junction boxes each complete with a 3 conductor (1-#2/0 and 2 - #2W) extra flexible border cable approximately 75 ft. long for tower arc light unit.

400. The above boxes shall receive the supply conduits and be equipped with suitable cable supports and clamps.

401. The following shall be furnished and installed on each portable stage tower, total eight (8), said towers to be furnished on stage by Others:

One (1) special switch panel having mounted thereon completely wired in an approved arrangement:

Five (5) Kliegle #525, 2-pole 25 amp. enclosed switches grouped together.
One (1) five gang 2-pole special pin plug connector with female section wired to tower cable and male section rigidly built into switch panel.
Six (6) 2-pole 25 amp. pin plug connectors having female section built into switch panel and the male section connected to lighting unit. Two of the above connectors to be wired to test switch.
One (1) special 150 amp. 3-pole polarized connector with bracket support consisting of a female receptacle wired to tower D. C. cable, a male plug wired to the spot machine and a combination male and female connector for re-

ceiving tower cable receptacle and spot machine plug.
Four (4) indicating lamps complete with iron outlet box, receptacle and red jewel lens, wired in conduit, with conduit fittings to pin plug connectors on test switch.

402. All lighting equipment for these towers is to be furnished by Others but shall be installed and connected by this Contractor. All slack wiring shall be laced to the tower framework in an approved manner.

WORK and TEST LIGHTS

403. Each of the four side bridges, Proscenium floodlight platform, Bridges "C", "E", "F", "G" and "H" and each stage tower shall be wired and equipped with a Work and Test Light circuit as hereinbefore described.

404. Furnish with this wiring fifteen (15) portable lights, each complete with 25'-0" of No. 12 Tyrex 2 conductor cable lamp receptacle, hand hook, male plug connector and heavy gauge lamp guard.

PIN PLUG CONNECTORS

405. All pin plug connectors included in the specification and as called for on plan for lighting circuits shall be Kliegle "Indestructable type" or approved equal.

406. These connectors shall be rated for 25 amperes and shall be equipped with locking springs for securing the contact.

CYCLORAMA FOOTLIGHTS

407. The cyclorama footlights shall be furnished by this Contractor and installed completely connected in recess provided in the stage floor.

408. These footlights shall be made up in sections as shown on plans and equipped with double row of "Oakite" finished aluminum reflectors of approved design for 200 Watt lamps.

409. Each section shall be wired similar to that specified for the Main Footlights and shall be connected to four (4) 3'-0" long "Tyrex" cables, equipped with 15 ampere male connectors.

410. Special plugging panels, fitted with built-in female receptacles shall be installed in the recess for facilitating connections to these sections, all as indicated on the plans.

411. This Contractor shall also furnish the necessary iron brackets for mounting these sections into trough.

412. Two (2) brackets shall be required for each section and the location for same shall be determined at the building.

INCANDESCENT POCKETS

413. Furnish and install, completely connected, flush type stage incandescent pockets at locations indicated on the plans.

414. All four-gang pockets shall be similar to Kliegle Type #354 and shall be of the illuminated type.

415. All two-gang pockets shall be similar to Kliegle Type #352 and all single gang pockets shall be similar to Kliegle Type #351.

416. Each cable groove shall be identified for its respective supply. Each receptacle shall be run direct to the reactor control on separate circuits to their respective fuse circuit section.

417. All pockets shall be furnished complete with 2-pole plugs.

418. Four (4) of the four-gang stage pockets shall have a receptacle of 50 ampere dapacity,, as indicated on plans.

419. All incandescent pockets on the stage elevators shall be concealed beneath trap doors and wired complete with swing cables to the elevator pits at sub-basement.

STAGE ARC POCKETS

420. Furnish and install, completely connected, flush type stage arc pockets at locations indicated on the plans.

421. All two-wire pockets shall be similar to Kliegle #1350.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

422. All three-wire pockets shall be special and polarized.

423. All pockets for bridges and towers and Proscenium platforms shall be three-wire. Stage floor pockets shall be two-wire.

424. Arc pockets occurring on stage elevators shall be concealed beneath trap doors and wired complete with swing cable to junction boxes in the elevator pit.

REVOLVING STAGE POCKETS

425. All pockets indicated on the revolving stage shall be wired to commutators located at the under side of the stage and extended to the elevator pits for connections to the panel circuits.

426. The commutator and brushes will be furnished by the Elevator Contractor with whom this Contractor shall cooperate toward the satisfactory installation of this work.

STAGE RHEOSTATS

427. All rheostats for the stage arc lights, excepting those on the stage floor, shall be located in the Rheostat Room located in the stage basement.

428. All rheostats will be furnished by Others but shall be installed, completely connected by this Contractor.

429. For the mounting of these rheostats, this Contractor shall provide a special angle iron structure built of 1½" angle iron members providing seats for the various rheostats, all as per detail given by the Engineer.

430. All wiring to these rheostats shall extend from the pockets to the D. C. Panel Board hereinafter specified, and be connected by rigid conduit to wiring troughs mounted to the angle iron structure.

431. The trough shall be built of not lighter than #12 gauge steel and shall be accessible.

432. At each rheostat location, suitable porcelain bushings shall be provided to facilitate connections between the trough and the rheostats.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

433. All wiring in the troughs, including connections to the rheostats shall be extra Flexible Rockbestos wire, of sizes as indicated on the plans.

434. The third wire connection shall constitute an intermediate tap on the rheostat.

435. The wiring shall be similar to that indicated on the plans for the rheostats at the Projection Booth.

DOWSER ARC CONTROL

436. Each arc spot and arc flood light will be furnished by others and equipped with a special dowser, the operation of which will be accomplished by the use of a special Beleyn or similar control motor.

437. This Contractor shall furnish the control wiring for these dowsers connecting to the switches provided on the stage console control board.

438. Each group control will consist of five (5) wires, the group being as follows:

Projection Booth Spotlights (4 motors)
North Spot Booth (6 motors)
South Spot Booth (6 motors)
"D" Cove Spot Booth (6 motors)
Prompt Bridge and Tower Spots (9 motors)
O. P. Bridge and Tower Spots (9 motors)
Proscenium platform spots (4 motors)

439. Dowser control outlets shall each be equipped with a 5 ft. length of five (5) conductor #12 asbestos cable which shall connect to a special 5 point pin plug connector furnished with the arc machine.

440. The dowser control for the towers shall include a special 5 conductor extra flexible stage cable approximately 75 ft. long, extending from cable junction boxes located on the side bridges similar to that specified for the lighting circuits. These cables shall be furnished complete with 5 point separable connectors rigidly secured to the tower framework.

441. The above wiring to be furnished complete with necessary outlets and connections as approximately indicated on plans.

Electrical.
Metropolitan Square.
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

STAGE WORK POCKETS

442. Furnish and install in the Proscenium recess at each side of the stage, a Kliegl or approved equal 25 ampere flush wall pocket similar to type #310.

443. These pockets shall be wired to stage work panel as shown on plans.

MOTOR GENERATOR EQUIPMENT

444. This Contractor shall furnish and install, completely wired, eighteen (18) motor generator equipments in the Motor Generator Room as indicated on Drawing E-01.

445. Each motor generator shall consist of a compound wound inter-pole constant potential generator, coupled to a 3-phase 60 cycle 208 volt induction motor.

446. The characteristics of the motors and the generators are indicated in Schedule shown on the above mentioned drawing.

447. All units shall be quiet-operating, 1150 r.p.m. and shall be specially designed for motion picture duty.

448. Each motor generator shall be mounted on a suitable foundation as per detail shown on plans, all insulating equipment being furnished by this Contractor.

449. The Contractor's attention is called to the installation of overhead trolley beams in the motor generator room.

450. All conduits to the motor generators shall be laid in the floor fill as shown and properly terminated in conduit fittings provided on the machines.

451. The concrete foundation for these machines shall be furnished by Others but this Contractor shall be required to provide the necessary pipe sleeves and anchoring apparatus for securing the motor generators.

452. The Contractor shall furnish with each motor generator set a flush wall mounted control panel, complete with ammeter, external shunt, voltmeter, field rheostat and indicating lamp, wired as shown on Drawing E-6.

453. Each motor shall be provided with a remote control station consisting of momentary contact switches and indicating lamps for the remote control of each unit.

454. This Contractor shall furnish with each motor generator set a 3-pole, 3-coil "Auto-Dalite" Urelite circuit breaker as indicated in the Schedule, together with the necessary automatic starting compensators, mounted in totally enclosed metal cabinets.

455. These starters shall be of design, suitable for these motor generator sets, and shall meet the requirements of the Lighting Company and the satisfaction of the Engineer.

D. C. CONTACTOR

456. Furnish and install in the Motor Generator Room, where indicated on the plans, a switchboard complete with ebony asbestos, or approved equal, panels and angle iron frame work.

457. This switchboard shall have mounted thereon two-pole magnetically held fused contactors, as listed in the schedule.

458. Each contactor shall be equipped with a two-pole auxiliary relay for the coil circuit, said relay having an A. C. coil connected to panel "EM" as shown on diagram.

459. These contactors shall serve as disconnects between the generator and the respective D. C. panel boards hereinafter specified and the energizing circuits shall be controlled at the switchboard in conjunction with the arc black-out wiring system.

460. A short-circuiting switch shall be provided for each contactor for shunting the black-out control.

461. Contactors will not be required for the Pre-View Room motor generators.

D. C. ARC PANELBOARDS

462. This Contractor shall furnish and erect the D. C. Arc Panelboards for distribution of the D. C. arc circuits, all as indicated on the D. C. Panelboard Schedule, Drawing E-14.

Electrical
Metropolitan Square.
Theatre #10.

CLYDE N. PLACE
CONSULTING ENGINEER
NEW YORK CITY

463. Each panel shall connect to two motor generators as indicated in the Schedule.

464. A panel shall be supplied of 1¼" natural black slate and 3/4" barriers, mounted in a flush cabinet with doors at front and rear, having spring hinges, lock, keys and vault latches.

465. These panelboards shall have mounted thereon the specified quantity of two-pole, double throw, double fused, back-connected switches, the hinge terminal connecting to the arc machines and rheostats and the fused terminals connected by bus straps to the main bus bars. All connections, together with the main bus bars shall be mounted at the rear of the panel.

466. Each switch shall contain a card holder and all connections shall be properly polarized.

467. The instrument panels hereinbefore specified for the motor generators shall be located as directed near their respective panelboards.

468. The main bus bars shall be equipped with the shunts and calibrated leads for the ammeters on the control panel.

469. The generator field connection shall be carried through the panelboards with the generator feeders.

470. The D. C. panelboards for the Bridge and Tower arcs shall be built as one complete unit as shown on detail Drawing E-16.

471. The face plate shall be built of #10 gauge steel, Parkerized finish and extend from column #348 to Proscenium pier #349 as shown.

472. In addition to enclosing the panelboard, this face plate shall receive the switch panels, annunciators, control equipment and all such items as specified for the Stage Managers' station, all as approximately shown.

ARC COVE SPOT BOOTHS

473. Arc spot booths are located at the "D" Cove and at each side of the main Projection Rooms.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

474. Wiring to all spot machines shall terminate in flush floor plugging pockets and extend to their respective rheostats.

475. The wiring to these rheostats shall be similar in all respects to that specified for the stage rheostats.

476. Arrangement of equipment shall be installed as shown on the details and plans.

477. All spot machines are to be furnished by Others and shall be erected in place complete with connections by this Contractor.

PROJECTION BOOTH EQUIPMENT

478. This Contractor shall furnish and install the required wiring in the Projection Booth to provide for the operation of five (5) 150 ampere projectors; four (4) 150 ampere spots and two double 100 stereoptican arc machines.

479. All the arc machines for this booth will be furnished by Others but shall be erected in place and connected up by this Contractor.

480. All wiring shall conform with that indicated on the electrical plans and details.

481. All wiring between the disconnecting switches on the machines to the lamp housing shall be done in extra flexible asbestos covered wire, of size corresponding to the supplying circuits.

482. The rheostats for the above machines shall be located in the rheostat room adjacent to the Projection Room and shall be installed in a manner similar in all respects to that specified for the stage arcs and as shown on plans and details.

483. The D. C. circuits to the spot and effect machines shall terminate in flush wall type pockets of capacity as indicated.

484. Furnish and install, completely wired, five (5) instrument panels to be located under the port opening of each Projection Booth.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

485. These panels shall consist of a zero to 200, ampere ammeter with calibrated leads; a zero to 150 voltmeter, space and mounting for speed indicator and a panel enclosure of approved design.

486. The instruments shall be similar to Weston Model #269.

487. The panels shall set at an angle of 15 degrees from the port wall and shall be finished in color as directed.

488. The D. C. panel shall be equipped with a shunt rack at the rear and contain the external shunts for the ammeter on the Projection machine and instrument panels.

489. Each Projection machine shall be connected for change-over wiring with foot switches.

490. The motor circuits shall be brought to each projection machine through special floor boxes.

491. Voltmeter taps shall be provided for the voltmeters on the instrument panels.

STAGE PROJECTION BOOTH

492. This Contractor shall furnish and install, complete wiring for the operation of two projection machines in the Projection Booth at the rear of the stage where shown on plans and similar to that provided for the main Projection Booth.

493. The projectors will be furnished by Others but shall be set in place and connected by this Contractor.

494. Furnish and install two instrument panels, each complete with a 0-150 voltmeter and 0-150 ammeter for indicating the amperage and voltage of the machine arcs.

495. Provide the necessary bracket and frame work for the rheostats in the adjacent fan room and make the necessary connections thereto as described for other rheostat equipment.

Electrical
Metropolitan Square
Theatre #10.

PRE-VIEW ROOMS

496. Furnish and install, completely wired for the operation of two projection machines in each of the four (4) Pre-View Rooms at the Studio Floor and as shown on the Wiring Plans and Details.

497. Specifications for these rooms shall be similar to those provided for in the general Projection Booth.

REELITES

498. Furnish and install, completely wired, Appleton or approved equal, Reelites for projection and spot booths where shown on plans.

499. These units shall be complete with extension cords, spring rollers, lamp guard and hand hook.

STAGE COMPANY SWITCHES

500. Furnish and install where shown on Stage Plan, three (3) 400 ampere 4-wire stage company switches.

501. Each switch shall consist of a 400 ampere "SaftoFuse" or "Convertifuse" 4-wire 3-pole body, mounted in a #12 gauge steel surface cabinet.

502. Provide for the above switches a total of six (6) heads; two (2) of each are to be fused for 100 ampere, 200 ampere and 400 ampere respectively.

503. Wing nut terminals and copper extensions shall be provided at the bottom. Gutters shall be 6" at the top, 8" at the bottom and 2" at the sides.

504. The bottom of the cabinet shall be slotted and bushed for equipment cables.

505. The doors shall have spring hinges, lock, keys and vault latch.

506. The three switches shall be supplied by one feeder to the distribution switchboard.

STAGE DIRECTORS' STATION

507. This Contractor shall install at the Stage Manager's station, located adjacent to the Proscenium pier #349 on the stage, the necessary supports, metal panels and the like for

mounting of all equipment, specified herein for stage manager's location and shall include such items as annunciator, signals, telephones, indicators, switches and the like, all as approximately indicated on plans and details.

MUSICIAN'S FLOODS and SPOTS

508. In the space provided over the main ceiling at Cove "C", this Contractor shall furnish and install, completely wired, eight (8) four color Kliegl Boomerangs, each complete with three (3) 2000 Watt special adjustable reflector units and four (4) motor operated color frames, arranged as approximately indicated on Drawing E-7 and built similar to detail shown on Drawing E-16.

509. The supports for these units will be furnished by Others.

510. All motors shall be reversible and connect up for local and remote control.

511. Each unit shall be fitted with mirror reflectors, spill rings and adjusting levers.

512. The color frames shall be totally enclosed and operated by an approved rack and gear connection to the motors.

513. Spring access doors shall be provided to the color frames. These units shall be noiseless and shall be operated on ball bearings.

514. In addition to the above, furnish and install, completely wired, outlets for the independent spot lights, said outlets to consist of standard 4" boxes equipped with 25 ampere separable pin plug pigtail connectors.

515. These spotlights and their supports will be furnished by Others but shall be erected in place and connected by this Contractor.

MAIN CEILING COVE LIGHTING

515. This Contractor shall furnish and install completely wired to the main ceiling and side walls of the Auditorium, all cove lighting as indicated on Plan #E-10, complete with special wiring channels, receptacles, reflectors, holders and color lenses, of colors, as selected.

516. This Contractor shall refer to the architectural full size details for cove construction and consult with the Plastering Contractor so that proper provision shall be made for this work.

517. The wiring channels shall be made up of hinged sections as shown on details and will be concentric to the curvature of each cove.

518. This lighting shall extend along the full length of each cove and the exact length shall be determined upon the completion of the furring.

519. The above work shall be installed at the direction of the Engineer.

PERFORATION LIGHTING

520. The lighting for the main ceiling perforations shall be as indicated on Drawing E-11.

521. For the illumination for each perforated panel, this Contractor shall furnish four (4) reflector units, each equipped with four (4) individual reflectors mounted to a continuous wiring strip as shown on the detail.

522. Each of these reflector units shall be connected to a junction box by flexible conduit where the wiring shall be extended to the control equipment as shown.

523. The conduit shall be of sufficient length to permit adjusting of the reflectors.

524. The location of said outlets and the arrangement of the supports shall be as directed by the Engineer.

MEZZANINE SOFFITS LIGHTING

525. The lighting of the mezzanine soffits shall be as indicated on Drawing E-11.

526. This Contractor shall furnish the required continuous wiring strip reflectors as shown on detail and install same completely connected with necessary flatiron brackets, as directed by the Engineer.

527. The strip reflectors shall be wired alternating for four (4) colors and shall be built of #20 gauge sheet steel.

ORGAN CONSOLE RECESSES

528. Furnish and install all reflectors and wiring indicated on plans at the Organ Console Recesses at each side of the stage opening as directed by the Engineer.

CHORAL RUNWAY FOOTLIGHTS

529. Furnish and install, completely wired, a single row system of footlights in the choral stair runways at each side of the Proscenium as shown on Drawing E-2.

530. These footlights shall be built up into sections to conform to the curvature of the platform rail as indicated in detail on Drawing E-16.

531. Footlights shall consist of "oakite" finished aluminum reflectors 4½" o. c. and wired alternately for four (4) colors. The approximate length of these footlights are indicated on the plans but shall be verified at the building.

532. Each reflector shall be fitted with a stop notch so as to be held firmly in place and easily removable for relamping.

533. Each reflector shall also be equipped with a color lens as selected and an additional frame for gelatin mediums.

534. The wiring trough shall be of built-up design so that all reflectors shall be in line, as indicated.

CHORAL STAIRWAY SPOTS

535. Furnish and install where directed at the choral stairways six (6) spot outlets.

536. Each outlet shall be complete with a 25 ampere pin plug connector with 4 feet of #10 stage cable and shall be separately controlled at the stage switchboard.

537. Furnish and install completely connected at the rear of the prompt and opposite choral stairway, a continuous

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

strip reflector wired and equipped with 25 watt receptacles on 7" centers, wired alternately for four colors.

538. The strip shall be equipped with a continuous metal reflector of approved design and shall be arranged and wired as shown on plans.

BAND WAGON WIRING

539. The band wagon shall consist of a movable built-up structure, normally located on the musicians' pit elevator and arranged for the accommodation of the musicians.

540. This band wagon shall be furnished by Others, complete with storage batteries as its source of motive power.

541. The following wiring and equipment shall be furnished and installed by this Contractor on the above mentioned band wagon as directed by the Engineer:

75-Duplex pin plug pigtail connectors, wired on eight (8) circuits to panel board in the band wagon.
1-twelve (12) circuit fuse panelboard as per panelboard schedule.
1-D. C. Panelboard 2 to 2 wire 120 volts having mounted thereon the following 2-pole switches:
One 100 amp. main battery switch
One 30 " switch for musicians's lights
One 30 " switch for hot circuit to leader
One 60 " switch for motor supply
1-Automatically operated transfer panel complete with A. C. & D. C. interlocking contactor and no-voltage relay.
Wiring to contact rails for lighting and communication.
1-special enclosed 1500 Watt resistance dimmer for mounting on the musicians' leader stand.
Wiring for Baton lighting and spotlight.
All the above as indicated on diagram, in later detail.

542. This Contractor shall furnish the necessary swing cables and junction boxes for the connection of the above items to the external controls.

543. Batteries and driving motors with controls shall be completely connected and erected in place by this Contractor.

544. Charging panel will be furnished by Others and shall be erected by this Contractor in the space adjacent to the elevator pit and supplied by a circuit from panel "EM".

545. The band wagon lighting shall be normally controlled from the stage switchboard through contact rails when the band wagon is located on the musicians' platform.

546. This lighting shall be automatically and instantaneously transferred to the storage battery when the band wagon travels off the elevator platform in either direction.

547. The A. C. lighting shall be restored automatically and instantaneously as soon as the band wagon is returned to the platform.

MARQUISE D. C. PANEL

548. Two (2) of the motor generators shall be connected and wired to permit the transfer of their output to plugging panels located in the Foyer and 6th Avenue Marquise Roof, as shown on the Wiring Plans.

549. The transfer panel shall consist of a double-throw safety type switch as listed in the Schedule of Power Panels, and shall be located in the Generator Room.

550. Three (3) plugging panels shall be furnished each consisting of a three 200 ampere Klieg two-pole pockets with plugs, mounted in a weatherproof cabinet, built of #10 gauge steel.

551. These panels shall be located where directed by the Engineer.

EXIT and DIRECTIONAL SIGNS

552. Exit and directional signs shall be furnished by Others but shall be installed in place by this Contractor, as directed by the Engineer.

Electrical
Metropolitan Square
Theatre #10.

553. The location of these outlets is approximately shown on plans but shall conform to that indicated on the architectural details.

554. The outlet boxes for these signs shall be suitable for the type sign furnished and shall be fitted, where required, with fixture studs.

STAGE ELEVATOR WIRING

555. All wiring in connection with the four (4) stage and musicians' elevator motors shall be furnished and installed by the Elevator Contractor.

556. The Electrical Contractor shall terminate the feeder wiring for these motors at the starting panels as indicated on the Electrical Plans.

SWING CABLE RECEPTACLES

557. This Contractor shall furnish in the pits of all the stage elevators, including the musicians' elevator, an approved metal receptacle, built of #10 gauge steel for receiving the slack cables of each elevator as the said elevators come to their low position.

558. These receptacles shall be of sufficient size to accommodate the full length of cables and shall be drilled to receive the junction boxes and conduits supplying the elevator cables.

559. Separate receptacles shall be furnished for each cable, for A. C., D. C. and communication circuits and all shall be designed for self-draining.

560. The receptacles shall be arranged so that the cables will evenly coil and uncoil without causing any entanglements, all as directed by the Engineer.

CURTAIN MOTOR WIRING

561. This Contractor shall furnish and install all wiring required for the stage curtain and equipment motors and shall include the erection in place of the necessary controllers, starting devices and remote push button stations.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

562. Definite locations of this equipment shall be determined by the Engineer, and are approximately indicated on the Wiring Plans.

ORGAN ELECTRICAL INSTALLATION

563. This Contractor shall furnish and install all wiring and empty conduits for the organs as indicated on the Electrical Plans.

564. This Contractor shall co-operate with the Organ Contractor in determining the proper terminals and arrangement of this work.

565. This wiring does not include the connections to the Organ proper and the consoles but includes the pulling-in of all organ cables which will be furnished by the Organ Contractor for the above empty conduits.

566. On the organ consoles this Contractor shall furnish and install all momentary contact switches for the remote control of the Organ blower and in addition furnish the necessary wiring for the keyboard reflectors.

567. This Contractor shall furnish and install, completely connected, a "Urelite" circuit breaker in the motor circuits as listed in the schedule.

568. Connections shall be made to the generator, complete with panel board and generator circuits to the various lofts and consoles.

ORGAN LOFT HEATERS

569. This Contractor shall furnish and install, completely wired, twelve (12) heater units in the Organ lofts where approximately shown on plans.

570. Each unit shall consist of 2000 Watt 120 Volt A. C. Prometheus or approved equal, enclosed heater, complete with thermostat for temperature control. Wiring to heaters shall be done in flexible asbestos covered wire.

571. Furnish and install two (2) panels as listed in the schedule on plans for the distribution of the heater circuits.

Electrical
Metropolitan Square
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

WORK LIGHT CONTROL PANEL

572. The down work lights on all borders shall be controlled individually and with master control at the "P" switch panel located at the prompt stage as indicated on the "D.C. Switchboard" detail and also controlled by switches provided on the Stage Console Control Board.

573. The "P" switch panel shall be built flush as indicated on the above detail and contain the following:

Work Light Section:

1-3 way toggle switch and pilot light for control of the "Work Light" reactor control. (See switchboard schedule)
8-Momentary Contact switches for opening
8-Momentary Contact switches for closing
17-Nameplates.

Constant Section:

4- S.P. toggle switches.
2- 4-way toggle switches.
6- 3-way toggle switches
12- nameplates.

574. The above switches shall be provided with outgoing and incoming terminals. Fuses for the constant section are provided in the "P" panelboard listed in Panelboard Schedule. The fues for the work lights are included in the reactor control.

Contactor Panel:

575. This panel shall be furnished and installed in the Basement reactor room and shall contain contactors for each border work light circuit. These contactors shall be Automatic Switch Co's or approved equal and shall each be controlled by momentary contact switches hereinbefore specified for "P" switch panel.

576. This panel shall be built of slate and enclosed in a #12 gauge cabinet with doors and keys. The panel shall have mounted thereon eight (8) 30 amp. contactors with top and bottom lugs. Each switch shall be provided with a nameplate.

Electrical
Metropolitan Square
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

577. The above wiring is approximately indicated on plans and details.

DISPLAY FRAMES

578. This Contractor shall wire and equip each exterior display frame, terminating wiring in panel boards, all as shown on plans.

579. Each display frame shall be supplied by a separate circuit and shall be equipped with reflector strips at top and bottom.

580. Each reflector strip shall be approximately 4'-6" long and contain X-Ray #52 -50 Watt reflectors 6" o.c.

581. The arrangement of these reflectors shall conform to the Architects' full size detail and shall be as directed by the Engineer.

DRESSING ROOM CONTROL WIRING

582. The control of the lights and receptacles in each dressing room shall be arranged so that they can be automatically extinguished by means of the doorman's control panel and by bit key closing of the look on the corridor door.

583. The above shall be in addition to the switches installed adjacent to the doors of each room for the local control of the lights.

584. To accomplish this the following equipment shall be furnished and installed and wired complete as per diagram and schedules indicated on plans:

585. The Contractor shall furnish in place and connect to each room, a Diamond "H" No. 60010 Mercury operated door bolt control switch.

586. Strike plates shall be drilled and switches shall be secured to same for installation in the door jambs.

587. This Contractor shall cooperate with the Hardware and Door Contractors in the arrangement of these switches.

588. The switching equipment for the dressing room outlets shall consist of a contactor panel for each dressing room section (north and south) completely wired and installed in separate rooms as shown on plans.

589. These panels shall be enclosed in No. 10 gauge steel soundproofed cabinets, fitted with hinge doors, lock and keys and vault latches.

590. Panels shall be built of natural black slate bases and barriers and have mounted thereon Sundh Electric Company's No. 7600 or approved equal contactors, all as listed in the Schedule.

591. The top terminals of these switches shall connect to the main bus bars and the bottom terminals shall be brought down to receive plug fuse branches for the circuit in their respective rooms.

592. These fuse branches shall be arranged for safety type dead front construction and the quantity of same shall be as per schedule.

593. All switches shall be equipped with auxiliary contacts for remote indicating lamps and all magnet coils shall be properly fused.

594. The doorman's panels for the remote control of this lighting shall be of special compact design, and shall contain an indicating lamp and 10 ampere toggle switch for each room controlled.

595. These panels shall also contain a Master toggle switch for control of all the indicating lamps.

596. Each control switch shall be connected in series with the door bolt switches hereinbefore specified.

597. A Bakelite terminal block shall be provided in each control panel for connections to the switches and lamps. All outgoing circuits shall terminate at this terminal block and extend with flexible wire to the switches and lamps.

598. The above control panel may be supplied as an integral part of the dressing room panels "DM & DS", all of which shall be installed as directed.

99. This Contractor shall furnish and install completely wired at Stage Manager's Station a Holtzer-Cabot No. 162052 or approved equal flush type 110 volt lamp annunciator with master disconnect switches. This annunciator shall be arranged in two divisions and shall contain a light indicator for each dressing and chorus room at north and south sections. Each division shall contain eighteen (18) indicators and one disconnect switch wired and installed as shown on plans and details. Finish shall be as directed.

Electrical
Metropolitan Square
Theatre #10.

DRESSING ROOM TROUGH LIGHTING

600. Furnish and install completely wired, trough lighting indicated on the plans for the assembly, ballet and rehearsal rooms.

601. This trough lighting shall be built as per the details shown on plan and shall be furnished complete with Holophane glass panels, as selected.

602. These panels shall be set in metal trims in hinged sections and shall be installed flush with plaster ceiling.

603. The trough enclosure and wiring ducts shall be built of No. 20 gauge and painted on the inside with three (3) coats of heat resisting flat white.

604. Receptacles shall be wired alternately for the circuits indicated.

MARQUISE and SIGN LIGHTING

605. The extent of work covered by this specification for marquise and sign lighting shall provide for feeders and necessary terminal junction boxes as indicated on plans.

606. All wiring and necessary circuits to the signs and marquise soffits shall be covered by a separate specification or addenda hereto.

ACT ANNUNCIATOR WIRING

607. Furnish and install all wiring and outlets indicated on plans for act annunciators located in the Auditorium at each side of the Proscenium opening.

608. These annunciators will be furnished by Others but shall be installed and connected in place by this Contractor.

CHANDELIER PLUGGING PANELS

609. This Contractor shall furnish for each of the three (3) chandeliers in the Grand Foyer, a five (5) circuit plugging panel, to be located adjacent to the windlass in the Fan Room over the Foyer.

610. These panels shall consist of 25 ampere pin plug connectors for each circuit with the female section built into the plugging panel. The male section shall be secured to the lighting fixture wiring by the lighting fixture Contractor.

611. All wiring for the windlass shall be done by the Contractor, all as shown on plans.

LEADER'S STAND WIRING

612. This Contractor shall install on the Leader's Stand, furnished by Others, a special panel containing all the equipment mentioned in this specification for Leader's Stand mounting.

613. The necessary connections to the contacts with band wagon and elevator platform complete with the required swing cables, to outlet boxes in the elevator pit shall be included.

UTILITY ROOM WIRING

614. Furnish and install complete wiring as indicated on the plans, for utility rooms such as kitchen, tailor, wardrobe room, quartermaster's room and the like.

615. The outlets indicated on the plans are approximately placed and the accurrate locations will be determined in later plans.

616. Equipment for these rooms will be furnished by Others but shall be installed in place and completely connected by this Contractor.

TIME BEATER

617. Furnish and install a complete time beater system at locations as directed, the said system consisting of the following equipment completely wired:

Three (3) - Kliegl 4-key time beater
Four (4) - Time beater annunciators.
One (1) - 110 Volt supply to panel S.W.

Electrical
Metropolitan Square
Theatre #10.

SCENE DOCK FIXTURES

618. Furnish and install where shown on plans two (2) Thompson #31 safety disconnect hangers complete with hoisting cable, pulleys, safety catch, Benjamin No. 5644 R.L.M. fixtures, all arranged as directed.

EXTERIOR FLOODS

619. Furnish and install completely wired, all exterior flood light units complete with weatherproof outlets in the three exterior balconies shown on plans for the 50th and 51st Street elevation.

620. These units shall consist of X-Ray #25 reflectors for 250 Watt lamps and to be complete with diffusing color lenses and adjustable brackets, all arranged as directed.

CYCLORAMA STARS

621. This Contractor shall furnish and install complete system of wiring for five hundred (500) star units to be built into the cyclorama at the stage.

622. The control for these stars is included in the stage switchboard schedule.

623. The following shall be furnished by this Contractor:

Feeder to gridiron outlet.
Swing cable from outlet to cyclorama switchboard.
Kliegl special switchboard mounted on cyclorama, consisting of 25 fused toggle switches and 10 momentary contact switches with resistors for blinking operation.
Each toggle switch shall connect to twenty (20) stars.
1½ K.V.A. G.E. transformer with 120, 115 and 110 volt primary taps and 6 volt secondary.
500 miniature straight side composition receptacles with pigtails as selected.

624. The star enclosures with crystals will be furnished by Others and built into the cyclorama and will be of sufficient size to receive the miniature receptacles.

625. All wiring for these stars shall be evenly arranged and secured to the cyclorama construction in a good workmanlike manner.

626. Arrangement of these star units will be given in a later detail and will cover the entire cyclorama area.

STAGE MINIATURE LIGHTING

627. The following shall be furnished, installed and completely wired by this Contractor for stage miniature lighting:

1-500 Watt - 120-6 Volt G. E. Transformer located in Reactor Room.
1-50 ampere flush wall plugging pocket located on the stage.

628. Switchboard control and dimmer for this equipment is included in the Stage Switchboard Schedule.

FIRE ALARM and WATCHMAN TOUR SYSTEM

629. Furnish and install a complete system of conduits and wiring required for a National District Telegraph Watchman Tour and Manual Fire Alarm System for the theatre.

630. The stations for these systems are approximately indicated on plans and final locations for same will be shown on Architects' scale details.

631. All fire stations shall be joined by 4 #14 wires in 3/4" conduit and connect to a fuse box located adjacent to the telephone main terminal cabinet.

632. The alarm transmitter stations shall join the nearest fire station with three #14 wires in 3/4" conduit.

633. Outlets for these stations and the intermediate mechanical key stations will be supplied to this Contractor by the National District Telegraph Company.

PUBLIC TELEPHONE CONDUITS

634. This Contractor shall furnish and install all empty conduits, outlets and flush junction boxes required for the public telephone systems as shown on plans.

635. All feeder conduits shall emanate from the main telephone service cabinets to the various junction boxes where they shall branch out to the different telephones, terminating in iron outlet boxes with bushed covers.

636. Location of these telephones shall determine the type of outlet to be furnished.

637. All junction boxes shall set flush with the finished wall and be equipped with hinged covers.

638. This Contractor shall be required to co-operate with the Telephone Company for the arrangement of conduits and the construction details of the junction boxes.

ORGAN TELEPHONES

639. Furnish and install an independent system of telephone communication between the following Organ Equipment stations:

North Lower Loft.
North Upper Loft.
South Lower Loft.
South Upper Loft.
North Console.
South Console.

640. The installation shall consist of six (6) telephone receptalces and four (4) complete telephone instruments.

641. The telephones shall be of the type manufactured by Loeffler Telephone Company or approved equal and shall be common talking without ringing.

642. The above telephone instruments shall consist of a breast plate transmitter and head set receiver with extension cords.

643. The cords for the lofts shall be 50' long and that for the console telephones shall be 10' long.

644. All telephone cords shall be fitted with a plugging jack for connection to an approved jack receptacle.

645. The system shall be wired in rigid conduit and energized by a 12 volt power unit enclosed in an accessible cabinet at one of the lofts.

ELECTRIC CLOCK SYSTEM

646. Furnish and install, where indicated on plans and as per schedule following, a complete Telechron Clock System with control equipment:

Wall boxes to be furnished by Electrical Contractor for all clocks.

Movements in all clocks to be of the dual motor resetting type.

Semi-Flush Clocks to have spun aluminum cases, finished statuary bronze, with white enamel dials and black Arabic numerals. Sizes as indicated on schedule.

Flush Clocks to have narrow spun cases, finished as directed by the Architects, with silver dials and etched in black enamel Arabic numerals. Sizes as indicated on schedule.

Mantle Clocks to be selected by Architect.

Gauge Clocks to be surface type with dust and moisture-proof cast metal case, chromium finish.

Floor Standing Clocks to be of design as selected by the Architects and Engineer. An allowance of Three Hundred Dollars ($300.00) shall be included for each floor standing clock.

Central Control Equipment - install in connection with this System, a #90 resetting device from which all clocks can be reset in case of daylight saving time changes, etc. Control equipment to be located in Electrician's Room at Basement.

Wiring - Two No. 14 rubber covered wires in conduit are required from panel "EM" to resetting device, and three (3) wires between resetting device and each clock as shown on plans.

Electrical
Metropolitan Square
Theatre #10.

Guarantee: All equipment shall be as furnished by the Electric Time Company of America, Inc. of New York City, or approved equal, and guaranteed against any defect in material or workmanship of installation which may develop within the following twelve months:

SCHEDULE

	LOCATION	ROOM NO.	FLOOR	DIAL SIZE	TYPE
1.	Librarian	0011	Sub-Basement	6"	Semi-Flush
2.	Mus. Club Room	001	Sub-Basement	10"	Semi-Flush
3.	Organist	0010	Sub-Basement	6"	Semi-Flush
4.	Orch. Manager	062	Basement	6"	Semi-Flush
5.	Stage Hands L.R.	069	Basement	8"	Semi-Flush
6.	Chief Prop.	068	Basement	6"	Semi-Flush
7.	Electricians& RM.	080	Basement	6"	Semi-Flush
8.	Cafteria	045	Basement	10"	Semi-Flush
9.	Corridor	044	Basement	8"	Semi-Flush
10.	Quartermaster	023	Basement	8"	Semi-Flush
11.	Gauge Board Machine Room	089	Basement	6"	Gauge
12.	Refrigeration	090	Basement	10"	Semi-Flush
13.	Pay-Off Room	042	Basement	6"	Semi-Flush
14.	Treasurer	029	Basement	6"	Flush
15.	Passage	021	Basement	6"	Semi-Flush
16.	Accounting	027	Basement	6"	Semi-Flush
17.	Women's Lounge	010	Basement	5"	Mantle
18.	Men's Lounge	09	Basement	5"	Mantle
19.	Telephone Room	05	Basement	6"	Flush
20.	Switchboard Console		Orchestra	5"	Flush
21.	Stage Manager		Stage	10"	Semi-Flush
22.	O. P. Stage		Stage	12"	Semi-Flush
23.	Assembly Room	102R	Stage	8"	Semi-Flush
24.	Elect. Office	106R	Stage	6"	Semi-Flush
25.	Assembly Room	102R	Stage	8"	Semi-Flush
26.	Manager's Office	9A	Orchestra	6"	Flush
27.	Box Office		Lobby	6"	Flush
28.	Box Office		Lobby	6"	Flush
29.	Box Office		Lobby	6"	Flush
30.	Box Office		Lobby	6"	Flush
31.	Seat Indicator	10	Grand Foyer	6"	Flush

Electrical
Metropolitan Square
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

ELECTRIC CLOCK SCHEDULE - Con't.

	LOCATION	ROOM NO.	FLOOR	DIAL SIZE	TYPE
32.	Stage Ent. Lobby	203L	2nd Tier	8"	Semi-Flush
33.	Stage Ent. Lobby	203R	2nd Tier	8"	Semi-Flush
34.	Art & Costume	315R	3rd Tier	6"	Semi-Flush
35.	Production Mgr.	313R	3rd Tier	6"	Semi-Flush
36.	Stage Manager	314R	3rd Tier	6"	Semi-Flush
37.	Office	312R	3rd Tier	6"	Semi-Flush
38.	Secretary's Office	311R	3rd Tier	6"	Semi-Flush
39.	Conductors Office	310R	3rd Tier	6"	Semi-Flush
40.	Director's Office	309R	3rd Tier	8"	Semi-Flush
41.	Chorus Room	304L	3rd Tier	8"	Semi-Flush
42.	Seat Indicator	102	1st Mezz.	6"	Flush
43.	Manager's Office	117	1st Mezz.		Floor Standing
44.	Asst. Man. Office	118	1st Mezz.	6"	Flush
45.	Reception Room	120	1st Mezz.	6"	Flush
46.	Seat Indicator	203	2nd Mezz.	6"	Flush
47.	Smoking Room	207	2nd Mezz.	5"	Mantle
48.	Chorus Room	402R	4th Tier	8"	Semi-Flush
49.	Chorus Room	403R	4th Tier	8"	Semi-Flush
50.	Chorus Room	402L	4th Tier	8"	Semi-Flush
51.	Chorus Room	403L	4th Tier	8"	Semi-Flush
52.	Dressing Room	514R	5th Tier	6"	Semi-Flush
53.	Dressing Room	515R	5th Tier	6"	Semi-Flush
54.	Dressing Room	516R	5th Tier	6"	Semi-Flush
55.	Dressing Room	517R	5th Tier	6"	Semi-Flush
56.	Chorus Room	503R	5th Tier	8"	Semi-Flush
57.	Dressing Room	514L	5th Tier	6"	Semi-Flush
58.	Dressing Room	515L	5th Tier	6"	Semi-Flush
59.	Dressing Room	516L	5th Tier	6"	Semi-Flush
60.	Dressing Room	517L	5th Tier	6"	Semi-Flush
61.	Chorus Room	503L	5th Tier	8"	Semi-Flush
62.	Seat Indicator	303	3rd Mezz.	6"	Flush
63.	Smoking Room	307	3rd Mezz.	5"	Mantle
64.	Dressing Room	614R	6th Tier	6"	Semi-Flush
65.	Dressing Room	615R	6th Tier	6"	Semi-Flush
66.	Dressing Room	616R	6th Tier	6"	Semi-Flush
67.	Dressing Room	617R	6th Tier	6"	Semi-Flush
68.	Dressing Room	618R	6th Tier	6"	Semi-Flush
69.	Dressing Room	619R	6th Tier	6"	Semi-Flush
70.	Dressing Room	614L	6th Tier	6"	Semi-Flush
71.	Dressing Room	615L	6th Tier	6"	Semi-Flush
72.	Dressing Room	616L	6th Tier	6"	Semi-Flush
73.	Dressing Room	617L	6th Tier	6"	Semi-Flush
74.	Dressing Room	618L	6th Tier	6"	Semi-Flush
75.	Dressing Room	619L	6th Tier	6"	Semi-Flush

ELECTRIC CLOCK SCHEDULE - Con't.

	LOCATION	ROOM NO.	FLOOR	DIAL SIZE	TYPE
76.	Wardrobe Room	702R	7th Tier	10"	Semi-Flush
77.	Wardrobe Room	703R	7th Tier	10"	Semi-Flush
78.	Wardrobe Room	702L	7th Tier	10"	Semi-Flush
79.	Wardrobe Room	703L	7th Tier	10"	Semi-Flush
80.	Projection Booth	420	Proj. Booth Level	8"	Semi-Flush
81.	Private Box	426	" "	6"	Flush
82.	P.A. Observer	427	" "	5"	Flush
83.	Fan Room	430	" "	6"	Gauge Type
84.	Rehearsal Room	805R	8th Tier	10"	Semi-Flush
85.	Lounge Room	802R	8th Tier	10"	Semi-Flush
86.	Rehearsal Room	806L	8th Tier	10"	Semi-Flush
87.	Lounge	802L	8th Tier	10"	Semi-Flush
88.	Broadcasting Control Room	636	Studio	5"	Mantle
89.	Rehearsal Room	632	Studio	12"	Semi-Flush
90.	Tryout Room	625	Studio	8"	Semi-Flush
91.	Tryout Room	626	Studio	8"	Semi-Flush
92.	Tryout Room	627	Studio	8"	Semi-Flush
93.	Preview Room	606	Studio	8"	Semi-Flush
94.	Preview Room	607	Studio	8"	Semi-Flush
95.	Preview Room	605	Studio	8"	Semi-Flush
96.	Preview Room	650	Studio	8"	Semi-Flush
97.	Reception Foyer	669	Studio	6"	Flush
98.	Studio	657	Studio		Floor Stand.
99.	Studio	658	Studio	5"	Mantle
100.	Studio	659	Studio	6"	Semi-Flush
101.	Studio	656	Studio	6"	Mantle
102.	Studio	713	Studio Mezz.	6"	Mantle
103.	Studio	714	Studio Mezz.	6"	Mantle
104.	Mezz. Ticket Off. N.	67	Orchestra	6"	Surface Wall
105.	Mezz. Ticket Off. S.	66	Orchestra	6"	Surface Wall
106.	Broadcasting Studio	633	Studio	5"	Mantle
107.	Broadcasting Control	417	Pros. Room Level	5"	Mantle

Electrical
Metropolitan Square
Theatre #10.

INTERCOMMUNICATING TELEPHONES

647. Furnish and install completely wired ready for operation, an automatic intercommunicating telephone system equipped with one automatic telephone switchboard and the required telephone instruments, all to be Automatic Electric Company's make or approved equal.

648. The main line automatic switchboard shall be contained in a steel and glass cabinet equipped with 150 ultimate lines, complete with equipment, 110 line switches, master switches, connections, trunk switch sections, repeaters, incoming connectors, main distributing frame, voltmeter, ammeters, automatic voltage regulators, automatic charging, ringing and lighting signal devices and busy machine and all necessary knife switches and fuses.

649. The batteries shall be furnished in duplicate on substantial framework with glass sand trays. Each battery shall be 48 volt with a capacity of 48 amp. hours. The automatic charging shall be arranged with the use of approved full wave A. C. Rectifier having an output of 5 amp.

650. The above equipment shall be installed in room at Basement where shown on drawings.

651. Each telephone shall have a dial as an integral part of itself, such dial to consist of a revolving disc having ten (10) finger holes, under which shall be mounted a stationary dial containing the figures 1 to 9 inclusive and 0 in black enamel on a white background. Impulse spring shall be of the floating type.

652. All receivers and transmitters shall be of the long distance type.

653. The Contractor shall install all work in accordance with the rules and requirements of the manufacturer and pay for the services of one of their erecting superintendents during the erection, installation and testing out of this system. Outlet boxes shall be similar to those specified for base receptacles but with bushed cover.

654. All wiring for this system shall run in conduit and will be in twisted pairs not lighter than #19 wires; where sufficient number of runs make cable advisable, the same shall

be lead covered cable not lighter than #22 wire. Furnish the necessary terminal blocks with connections properly identified.

655. All wiring shall conform to that shown on plans. The location of outlets and junction boxes and the like is approximately located only.

656. The following intercommunicating telephones shall be included in the system:

	LOCATION	ROOM	FLOOR	TYPE
1.	Musicians' Club Rm.	001	Sub-Basement	Wall
2.	Organist	0010	Sub-Basement	Desk
3.	Librarian) Multiple	0011	Sub-Basement	Desk
4.	Music Vault)	0012	Sub-Basement	Wall
5.	Assembly Space N.	0017	Sub-Basement	Wall
6.	Assembly Space S.	0017	Sub-Basement	Wall
*7.	Stage Switchboard		Basement	Hand Micro.
8.	Elect. Work Shop	079	Basement	Wall
9.	Elect. Office	080	Basement	Desk
10.	Passage - North	076	Basement	Wall
11.	Orchestra Manager	062	Basement	Cradle
12.	Assembly Space S.	067	Basement	Wall
13.	Carpenter	068	Basement	Desk
14.	Utility	059	Basement	Desk
15.	Sign Painter	060	Basement	Wall
16.	Cafeteria	045	Basement	Wall
17.	Corridor (Ushers)	044	Basement	Flush Wall
18.	Chief Usher	048	Basement	Desk
19.	Machine Room with ex. bell in Refrigeration Room . . .	089	Basement	Wall
20.	Engineers' Shop	091	Basement	Desk
21.	Officers	056	Basement	Wall
22.	Check Room	07	Basement	Wall
23.	Treasurer	029	Basement	Cradle
24.	Passage	021	Basement	Flush Wall
25.	M-G Room	0018	Basement	Wall
26.	Vault	026	Basement	Wall
27.	Accounting	027	Basement	Desk
* 28.	Stage Mgr's Station	103R	Stage	Hand Micro.
* 29.	O. P. Stage	103L	Stage	Flush Wall
* 30.	Orchestra Leader		Stage	Hand Micro.
* 31.	Organ Console N.	70	Stage	Hand Micro.
* 32.	Organ Console S.	71	Stage	Hand. Micro.

Electrical
Metropolitan Square
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

SCHEDULE OF INTERCOMMUNICATING TELEPHONES - Con't.

	LOCATION	ROOM	FLOOR	TYPE
33.	Manager's Office	9A	Orchestra	Cradle
34.	Check Room	9	Orchestra	Wall
*35.	Seat. Ind. Grand Foyer	10	Orchestra	Flush Hand Micro.
36.	Box Office, Lobby		Orchestra	Desk
37.	Box Office, Lobby		Orchestra	Desk
38.	Box Office, Lobby		Orchestra	Desk
39.	Box Office, Lobby		Orchestra	Desk
40.	Box Office, North	67	Orchestra	Desk
41.	Box Office, South	66	Orchestra	Desk
42.	Inner Lobby (Ticket Taker)	19	Orchestra	Jack Type Hand Micro.
43.	Ticket Lobby (Footman)	20	Orchestra	In Cabinet Hand Micro.
*44.	Orchestra Rear	8	Orchestra	In Cabinet Hand Micro.
45.	Electrical Room	106R	1st Tier	Desk
46.	Stage Doorman	204R	2nd Tier	Desk
47.	Stage Doorman	204L	2nd Tier	Desk
48.	Musical Directors' Rm.	309R	3rd Tier	Cradle
49.	Conductor Room	310R	3rd Tier	Cradle
50.	Secretary	311R	3rd Tier	Cradle
51.	Clerk's Office	312R	3rd Tier	Cradle
52.	Production Mgr's Room	313R	3rd Tier	Cradle
53.	Art Director's Room	315R	3rd Tier	Cradle
54.	Stage Manager's Room	314R	3rd Tier	Cradle
55.	Rear Projection Booth	319C	3rd Tier	Wall
*56.	Seat Ind. Prom.	103	1st Mezz.	Flush-Hand Micro
57.	Managers' Office) Multiple	117	1st. Mezz.	Cradle
58.	Reception Room)	120	1st Mezz.	Cradle
59.	Sign Supply Room	119	1st Mezz.	Wall
60.	Asst. Mgr's Office	118	1st Mezz.	Cradle
*61.	Seat Indicator Prom.	203	2nd Mezz.	Flush-Hand Micro.
*62.	Seat Indicator Prom.	303	3rd Mezz.	Flush-Hand Micro.
63.	North Spot Booth	419	Projection Booth Level	Wall
64.	Projection Booth North	420	" " "	Wall
65.	Projection Booth Center	420	" " "	Hand Micro.
66.	Projection Booth South	420	" " "	Wall

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Electrical
Metropolitan Square
Theatre #10

SCHEDULE OF INTERCOMMUNICATING TELEPHONES - Con't.

	LOCATION	ROOM	FLOOR	TYPE
67.	South Spot Booth	416	Projection Booth Level	Wall
68.	Broadcast Control Room	417	" " "	Cradle
69.	P.A. Observer Room	427	" " "	Cradle
70.	Private Box	426	" " "	Cradle
71.	Fan Room	430	" " "	Wall
72.	Wardrobe Room	702R	7th Tier	Wall
73.	Wardrobe Room	703R	7th Tier	Wall
74.	Wardrobe Room	702L	7th Tier	Wall
75.	Wardrobe Room	703L	7th Tier	Wall
76.	Reactor Room	506	Attic	Wall
77.	D-Cove	508	Attic	Wall
78.	Elevator Lobby	801R	8th Tier	Flush Wall
79.	Elevator Lobby	801L	8th Tier	Flush Wall
80.	Preview Room	605	Studio	Cradle
81.	Preview Room	606	Studio	Cradle
82.	Preview Room	607	Studio	Cradle
83.	Offices	625	Studio	Cradle
84.	Offices	626	Studio	Cradle
85.	Offices	627	Studio	Cradle
86.	Broadcasting Studio Closet	631	Studio	Wall
87.	Rehearsal Room	632	Studio	Flush Wall
88.	Broadcasting Control Room	636	Studio	Cradle
89.	Preview Room	650	Studio	Cradle
90.	Studio	657	Studio	Cradle
91.	Studio	657	Studio	Cradle
92.	Reception Foyer	669	Studio	Cradle
93.	Loading Platform South		Loading Platf'm	Wall
94.	Loading Platform North		Loading Platf'm	Wall
95.	Studio	713	Studio Mezz.	Cradle
96.	Studio	714	Studio Mezz.	Cradle
97.	Band Wagon Garage		Sub-Basement	Wall

657. All telephones indicated with an asterisk shall be equipped with a visible intermittently operated indicating lamp.

EXECUTIVE DICTOGRAPH SYSTEM

658. This Contractor shall furnish and install completely wired a Dictograph System of inter-communication as manufactured by the Dictograph Products Company, Inc. or approved equal.

659. The system shall include the following master stations:

	LOCATION	ROOM	NO. of CALLS	TYPE
1.	Studio	657	25 - 1	Table
2.	Studio	657	25 - 1	Desk
3.	Studio	658	25 - 1	Table

660. The above stations shall be equipped with loud speaker, sensitive microphone, double throw keys, indicators showing all incoming calls, buzzer control switch which automatically turns on a lamp when the buzzer is turned off or the buzzer when the lamp is turned off, and hand sets that when used automatically cuts out the loud speaker and microphone and gives privacy to the conversation. The above three stations shall be wired in multiple.

661. The system shall include the following sub-stations:

	LOCATION	ROOM	NO. of CALLS	TYPE
1.	Foyer	669	24-1	Desk
2.	Studio	659	6-1	Desk
3.	Studio	702	6-1	Desk
4.	Studio	703	6-1	Desk
5.	Studio	713	6-1	Desk
6.	Studio	714	6-1	Desk
7.	Office	625	20-1	Desk
8.	Office	626	20-1	Desk
9.	Office	627	20-1	Desk
10.	Chief Elect.	080	20-1	Desk
11.	Chief Carpenter	068	20-1	Desk
12.	Chief Prop.	059	20-1	Desk
13.	Treasurer	029	20-1	Desk
14.	Stage Manager	Stage	20-1	Desk
15.	Manager	117	20-1	Table
16.	Reception	120	20-1	Desk
17.	Designer	702L	20-1	Desk
18.	Musical Dir.	309R	20-1	Desk
19.	Secretary	311R	20-1	Desk
20.	Prod. Manager	313R	20-1	Desk
21.	Stage Manager	314R	20-1	Desk
22.	Art Director	315R	20-1	Desk

662. The above shall be selective ringing and selective talking. Every station shall be able to call every other station with which it has connection, or two or more simultaneously,

and hold a conference either individually on individual keys or on the conference line.

663. There shall be as many conversations carried on simultaneously as there are pairs of instruments in the system with the three Master stations having right of way over all lines. An executive indicator shall show when the executive station is calling even though busy and if called when away the indicator shall remain in sight until the call is made or the indicator released.

664. This system shall be installed complete with rigid conduit, outlet boxes, approved special lead covered cable, necessary junction strips, batteries, incidental material and the like. The system shall be guaranteed for ten years against all mechanical and electrical defects and serviced for one year.

ELECTRICIANS' COMMUNICATION SYSTEM

665. This Contractor shall furnish and install an additional Dictograph System of inter-communication between the chief electrician's stations and each spot booth.

666. This system shall consist of the following stations:

	LOCATION		EQUIPMENT
1.	Stage	---	2 Call Sub-Station Hand Set
2.	Console Board	---	Loud Speaker Sensitive Microphone 2 Call button Station
3.	"D" Cove	---	6 call Sub-Station Hand Set
4.	Projection Booth North		Loud Speaker Microphone
5.	Projection Booth South		Loud Speaker Microphone
6.	Spot Booth North	---	Loud Speaker Microphone
7.	Spot Booth South	---	Loud Speaker Microphone

667. The stage station shall be communicative with the Console and "D" Cove stations and the Console station communicative with the "D" cove and switchboard stations.

Electrical
Metropolitan Square
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

668. The "D" Cove station shall call all six stations. The four projection rooms and spot booths shall only be called and to answer over their microphones, but not originating the calls.

669. All wiring, cable and the like shall be as specified for the Executive System and arranged as approximately indicated on the plans.

670. This system shall be guaranteed and serviced as called for in the Executive Dictograph System.

SOUND PICTURE PROJECTION SYSTEM

671. Furnish and install a complete system of wiring, with necessary conduits, outlets, junction boxes, troughs and receptacles necessary for the operation and installation of the Sound Projection System.

672. The Sound Equipment will be furnished by the Sound Equipment Contractor but shall be installed in place complete with necessary supports, framework and the like by the Electrical Contractor, all in accordance with the requirements of the Sound Equipment Contractor and to the satisfaction of the Managers, Architects and Engineer.

673. The following equipment shall be furnished to this Contractor by the Sound Equipment Contractor for erection at locations where directed:

a. Three (3) amplifier racks to be erected in Projection Room.
b. Five (5) K-30140 push-button switches complete, to be located on port hole wall.
c. Six (6) similar observer station switches to be located as follows:

One (1) at P. A. Control Box.
Two (2) at Rear Orchestra.
One (1) at 1st Mezzanine.
One (1) at 2nd Mezzanine.
One (1) at 3rd Mezzanine.

d. One (1) Volume Control Indicator in P. A. Control Box.

e. Five (5) Sound Heads for Projection Machines.
f. Four (4) Directional Baffle Loud Speakers to be installed on stage.
g. Two (2) floor pockets for Loud Speaker stage floor connections.
h. Five (5) Fader control switches to be installed on port wall of Projection Room.
i. One (1) Monitor Horn in Projection Booth.

674. In addition to the necessary outlets and wiring, the Electrical Contractor shall furnish and install the following:

One (1) Distribution Panel of Safety dead front construction (shown on plans as "PAS") equipped with the following switches:

Five (5) 3 P.S.T. 15 Ampere 208 V. fused switches.
Four (4) S.P.S.T. 15 Ampere 120 V. fused switches.
Necessary 50 Ampere bus bars and connectors.

One (1) 4 x 4 x 8 junction panel with two (2) 12 connector terminal strips to be installed on gridiron for Loud Speaker cable.

One (1) swing cable to speaker units on picture sheet.

One (1) accessible wiring channel approximately 5'1" long to be erected on top of amplifier racks.

675. The wiring for the Sound Picture Projection System is approximately shown on plans.

PUBLIC ADDRESS SYSTEM

676. Furnish and install a complete system of wiring, with necessary conduits, outlets, junction boxes, troughs and receptacles necessary for the operation and installation of the Public Address System.

677. The Public Address Equipment will be furnished by the Public Address Equipment Contractor but shall be installed in place complete with necessary supports, framework and the like

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

by the Electrical Contractor, all in accordance with the requirements of the Public Address Equipment Contractor and to the satisfaction of the Managers, Architects and Engineer.

678. The following equipment shall be furnished and installed completely wired by the Electrical Contractor:

a. Fourteen (14) stage pockets with "Cannon" type F5-53 receptacles and plugs to be mounted in the stage floor and elevator platforms.

b. Eleven (11) standard 4" outlet boxes with "Cannon" F5-53 receptacles and plugs to be located in the Main Footlight Recess.

c. Seven (7) standard 4" outlet boxes with "Cannon" type F5-53 receptacles and plugs to be located in the Musicians' Pit Rail.

d. Six (6) standard 4" outlet boxes with "Cannon" type F5-53 receptacles and plugs to be located on runway platforms, three (3) per side.

e. Eight (8) standard 4" outlet boxes with "Cannon" type F5-53 receptacles and plugs to be used on light bridges "E", "F", "G" and "H" - two (2) to be located on the under side of each bridge.

f. One (1) stanard 4" outlet box with "Cannon" type F5-53 receptacles and plugs to be located in twelfth row Orchestra.

g. One (1) Flush stage pocket for mounting special 18 pole receptacle and plug to be located in stage floor for band wagon use.

h. One (1) box with one 18 tap terminal board for connecting microphone cable in Orchestra pit for band wagon use.

*i. Three (3) wiring troughs 9'-6" long x 7" deep x 4" high with removable cover on the 4" side, each box to contain thirteen (13) "Cannon" F5-53 receptacles and plugs mounted thereon. These boxes shall be built of #20 gauge sheet iron as per later detail. These receptacles shall be rigidly secured and shall be used for supporting the amplifier units.

Electrical
Metropolitan Square
Theatre #10.

*j. Three (3) boxes approximately 9'-6" long x 3" deep x 4" high with front opening covered, each supplied with thirteen (13) bushings for 1/2" cable connections from the amplifiers.

*k. Three (3) wiring troughs 4' long x 7" deep x 4" high with removable cover on the 4" side, each box to contain five (5) "Cannon" #5-53 receptacles and plugs mounted thereon. These boxes shall be built of #20 gauge sheet iron as per later detail. These receptacles shall be rigidly secured and shall be used for supporting the amplifier units.

*l. Three (3) boxes approximately 4' long x 3" deep x 4" high with front opening covered, each supplied with five (5) bushings for 1/2" cable connections from the amplifiers.

m. Twenty-eight (28) double pole single throw toggle switches to be installed in the top side of the boxes under *i. and *k. above adjacent to the #5-53 receptacles at the direction of the Sound Equipment Contractor.

NOTE: Items indicated by * shall be located in Basement Amplifier Room.

**n. One (1) wiring trough 6'-0" long x 7" deep x 4" high, with removable covering on 4" side, complete with eight (8) "Cannon" #5-53 receptacles and plugs.

**o. One (1) wiring trough 6'-0" long x 3" deep x 4" high with removable cover complete with eight (8) bushings for 1/2" cable connections from the amplifiers.

**p. One (1) metal enclosure for the above mentioned boxes, said enclosure to be approximately 6'-6" long x 1' deep x 2' high.

NOTE: Items indicated by ** shall be located at gridiron.

q. One (1) channel iron rack, complete with supports for mounting of the necessary amplifier units and Items *i. and *j.

r. One (1) channel iron rack for mounting the boxes under Items *k. and *l.

Electrical
Metropolitan Square
Theatre #10.

s. One (1) 24" x 24" panel box to be located in the Public Address Equipment Room and used as a cross connection box.

t. One (1) wiring channel with removable front cover, approximately 4" x 6" x 8'-4".

u. The end of this channel shall be terminated in the above mentioned cross connection box and secured to the amplifier rack.

v. One (1) safety type distribution panel containing the following branches:

Two (2) three pole ST fused 208 volt switches.
Eight (8) SPST fused 120 volt switches.
Necessary 50 ampere bus bars and connections.

w. One 10" x 10" x 4" box to be used for cross connection of effect loud speaker located on effect speakers over stage projection booth.

x. One (1) 10" x 14" x 4" panel box to be located in rear stage projection room for future television sets.

679. In connection with the P.A. on the band wagon, this Contractor shall furnish and install five (5) 10 circuit special pin plug receptacles at locations under stage section as directed. Approximately 200 feet of additional 20 conductor special shielded "Tyrex" cable shall be required with these receptacles.

680. The following equipment shall be furnished to this Contractor by the Public Address Equipment Contractor for erection at locations where directed:

1. Relay rack located in the PA Equipment Room.
2. Five (5) amplifier racks in the PA Equipment Room.
3. Two (2) 1000 ampere-hour storage batteries.
4. Two (2) Battery Chargers.
5. Two (2) "B" voltage supply units.

6. One (1) mixer control console to be located in the PA control box.

7. Two (2) equipment control racks to be located in the PA control box.

8. Six (6) Public Address loud speakers located as follows:

   a. four (4) above Proscenium behind grill work,
   b. two (2) (one on each side) in grill above organ loft.

9. Two (2) effect loud speakers located in room above rear stage projection booth.

10. Two (2) loud speaker field supply units located in PA Equipment Room.

11. Four (4) monitory loud speakers located as follows:

   a. PA Equipment Room.
   b. PA control box
   c. "D" Cove
   d. Stage switchboard.

12. One (1) battery charging panel located in PA Equipment Room.

13. One 10" x 14" x 4" panel box located in rear stage projection room.

14. One (1) Plug box on band wagon for microphone cable connection.

REHEARSAL SYSTEM

681. Furnish and install a complete system of wiring, with necessary conduits, outlets, junction boxes, troughs and receptacles necessary for the operation and installation of the Rehearsal System.

682. The Rehearsal System Equipment will be furnished by the Rehearsal Equipment Contractor but shall be installed in place complete with necessary supports, framework and the

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

like by the Electrical Contractor, all in accordance with the requirements of the Rehearsal Equipment Contractor and to the satisfaction of the Managers, Architects and Engineer.

683. In addition to the necessary outlets and wiring, the Electrical Contractor shall furnish and install the following:

a. One (1) Flush floor outlet box fitted with a F5-53 "Cannon" receptacle, to be installed in the 12th row of the Orchestra.
b. One (1) outlet box with "Cannon" F5-53 receptacle installed in the PA control box.
c. One (1) outlet box with "Cannon" F5-53 receptalce installed in private box.
d. One (1) Outlet box with "Cannon" F5-53 receptacle installed at Chief Electrician's station.
e. One (1) outlet box with "Cannon" F5-53 receptacle installed at light control console pit.

684. The following equipment shall be furnished to this Contractor by the Rehearsal Equipment Contractor for erection at locations where directed:

a. Twenty-nine (29) Loud Speaker Units.
b. Two (2) microphone control, stations at microphone outlets described under Items d. and e. of the foregoing paragraph.
c. Two (2) micro hone amplifiers to be located:

One (1) in private box
One (1) in PA control box

685. The wiring for this System is approximately indicated on the plans.

STAGE MANAGER'S CALL SYSTEM

686. Furnish and install a complete system of wiring, with necessary conduits, outlets, junction boxes, troughs and receptacles necessary for the operation and installation of the Stage Manager's Call System.

Electrical
Metropolitan Square
Theatre #10.

687. The Stage Manager's Call System will be furnished by the Call System Contractor but shall be installed in place complete with necessary supports, framework and the like by the Electrical Contractor, all in accordance with the requirements of the Call System Contractor and to the satisfaction of the Managers, Architects and Engineer.

688. The following equipment shall be furnished to this Contractor by the Call System Contractor for erection at locations where directed:

a. One (1) Amplifier rack installed in Microphone Amplifier Room in the Basement.

b. One (1) Microphone for mounting at stage manager's recess adjacent to the stage switchboard.

c. Seventy-one (71) Loud Speaker units to be located in the Dressing Room Sections.

689. In addition to the necessary outlets and wiring the Electrical Contractor shall furnish and install the following:

a. One (1) Microphone outlet complete with "Cannon" type MS-53 receptacles at Stage Manager's Recess.

b. One (1) 30 Ampere Magnetic latched-in contactor to be installed in Microphone Amplifier Room at Basement.

c. One (1) push-button control station with indicating lamp located at Stage Manager's recess for control of the above mentioned switch.

690. All wiring for this system is approximately shown on plans.

SEAT PHONE SYSTEM

691. Furnish and install a complete system of wiring, with necessary conduits, outlets, junction boxes, troughs and receptacles necessary for the operation and installation of the Seat Phone System.

692. The Seat Phone System Equipment will be furnished by the Seat Phone System Equipment Contractor but shall be installed in place complete with necessary supports, framework and the like by the Electrical Contractor, all in accordance with the requirements of the Seat Phone Equipment Contractor and to the satisfaction of the Managers, Architects and Engineer.

693. This System shall consist of an installation of two hundred (200) Accousticon Seat Phone Units attached to the underside of the chair arm and electrically connected by a wiring system to the "A" rack located in the P.A. Equipment Room.

694. As a basis of estimating the following locations will be used:

74 Units at front rows of Orchestra on two (2) circuits.
42 Units at 1st Mezzanine on one (1) circuit.
42 Units at 2nd Mezzanine on one (1) circuit.
42 Units at 3rd Mezzanine on one (1) circuit.

695. The Seat Phone Contractor shall furnish to the Electrical Contractor for erection, one hundred (100), Duplex Phone Jack boxes complete with armored cable extensions.

696. The wiring shall consist of the above circuits, each constituting 2-#14 L.C. wires in 1-3/4" c. terminating at each seat row for a total of the seats indicated, in Veco "JEMS" flush floor boxes. Extend from these boxes with flexible conduit to a length of flat metal moulding located at the rear of the chairs. At every pair of seats provide a suitable fitting and connection for the armored cable extensions previously mentioned.

697. All units shall be connected in series on their respective circuits and run continuously to the "A" rack.

698. All wiring shall be installed in a manner satisfactory to the Managers and Engineers.

REAR STAGE PROJECTION SOUND SYSTEM

699. Furnish and install a complete system of wiring, with necessary conduits, outlets, junction boxes, troughs and receptacles necessary for the operation and installation of the Rear Stage Projection Sound System.

700. The Rear Stage Projection Sound Equipment will be furnished by the Sound Equipment Contractor but shall be installed in place complete with the necessary supports, framework and the like by the Electrical Contractor, all in accordance with the requirements of the Sound Equipment Contractor and to the satisfaction of the Managers, Architects and Engineer.

701. The following equipment shall be furnished to this Contractor by the Sound Equipment Contractor for erection at locations where directed:

a. One (1) Amplifier rack.
b. Two (2) Soundheads for projection machines.
c. Two (2) Fader relay control switches to be installed in port wall of projection room.
d. One (1) Fader relay control switch to be installed in wall adjacent to door 3180.
e. One (1) outlet for film phonograph below Fader relay control switch.
f. One (1) Monitory loud speaker in projection room.

702. In addition to the necessary outlets and wiring, the Electrical Contractor shall furnish and install the following:

a. One (1) Distribution panel of safety dead front construction equipped with the following switches:

Three (3) 3 PST 15 Ampere 208 Volt fused switches
Necessary 30 ampere bus bars and connections.

b. One (1) 3P15 Ampere 208 Volt receptacle adjacent to door 3180.

703. The wiring for this system shall be as approximately shown on plans.

RECORDING SYSTEM

704. Furnish and install a complete system of wiring, with necessary conduits, outlets, junction boxes, troughs and receptacles necessary for the operation and installation of the Recording System.

705. The Recording System Equipment will be furnished by the Recording System Contractor but shall be installed in place complete with necessary supports, framework and the like by the Electrical Contractor, all in accordance with the requirements of the Recording System Contractor and to the satisfaction of the Managers, Architects and Engineer.

706. The following equipment shall be furnished to this Contractor by the Recording System Contractor for erection at locations where directed:

(a) One amplifier rack to be erected in Public Address Equipment Room.
(b) One monitory loud speaker.
(c) One storage battery.
(d) One remote level indicator to be located in PA control box.
(e) One "B" supply unit.
(f) Five (5) stations for Recordists' signal system - Install one adjacent to each 3 phase outlet for motion picture camera.

707. In addition to the necessary outlets and wiring, the Electrical Contractor shall furnish and install all the wiring approximately shown on the plans.

PREVIEW ROOM SOUND SYSTEMS

708. Furnish and install a complete system of conduits and wiring necessary for the operation and installation of the Sound Projection Systems in each of the four (4) Preview Rooms.

709. The equipment will be furnished by the Sound Equipment Contractor but shall be installed in place complete with necessary supports, framework and the like by the Electrical Contractor, all in accordance with the requirements of the Sound Equipment Contractor and to the satisfaction of the Managers, Architects and Engineer.

710. The following equipment shall be furnished to this Contractor by the Sound Equipment Contractor for erection at locations where directed for each Preview Room:

a. One (1) amplifier rack.
b. Two (2) Soundheads for monitoring on projectors.
c. Two (2) Fader relay control switches to be mounted in port wall.
d. Two (2) volume control stations to be mounted on port wall.
e. One (1) volume control station to be mounted in Auditorium.
f. One (1) volume indicator to be mounted on projection room walls.
g. One (1) projection room monitor.
h. One (1) screen loud speaker.

711. The following equipment shall be furnished by the Electrical Contractor for each Preview Room:

One (1) DPST fused 30 ampere switch, installed adjacent to amplifier.

BROADCASTING SYSTEM

712. Furnish and install a complete system of conduits and wiring necessary for the operation and installation of the Broadcasting System.

713. The equipment will be furnished by the Broadcasting Contractor but shall be installed in place complete with necessary supports, framework and the like by the Electrical Contractor and to the satisfaction of the Managers, Architects and Engineer.

714. The following equipment shall be furnished to this Contractor by the Broadcasting Contractor for the erection at locations where directed:

a. Necessary shielded cable.
b. Main Distributing Cabinet to be located on Stage.
c. Booth Distributing Cabinet to be located in Broadcasting Control Room.
d. Control Panel and table for Control Room.
e. One (1) relay rack and associated amplifier equipment in Broadcasting Control Room.
f. One (1) Power Control Panel.
g. Necessary connector strips.
h. Fifty-three (53) microphones complete with outlet boxes and unwired receptacles as follows:

Four (4) for Proscenium Arch
Six (6) for Footlights
Six (6) for Musicians' Elevator
Four (4) for Side Stages
Four (4) for Stage
Two (2) for Cove "A"
Four (4) for Balcony
Four (4) for Foyer and Vestibule
Four (4) for Parabola Units, where directed.
Seven (7) for Broadcasting Studio
Eight (8) for Rehearsal Room

i. Distributing Cabinet in Studio Control Booth.
j. Control Panel and table for Studio Control Room.
k. One (1) Relay Rack and associated amplifier equipment for Studio Control Booth.
l. One (1) Distributing Cabinet for Rehearsal Room.
m. Two (2) signal stations in special outlet box for stage.

IV. The wiring for this system is approximately shown on plans.

RADIO MONITORING SYSTEM

VI. Furnish and install a complete system of conduits and wiring necessary for the operation and installation of the Radio Monitoring System.

VII. The equipment will be furnished by the Radio Contractor but shall be installed in place complete with necessary supports, framework and the like by the Electrical Contractor and to the satisfaction of the Managers, Architects and Engineer.

VIII. The following equipment shall be furnished to the Electrical Contractor by the Radio Contractor for erection at locations where directed:

a. One (1) Automatic cabinet phonograph in Studio 657.
b. Two (2) Loud speakers in Studio 658 located in wall.
c. Four (4) Loud speakers in Studio 656 located on east wall.
d. One (1) Radio amplifier and central equipment cabinet to be located in PA equipment room.

Electrical
Metropolitan Square
Theatre #10.

e. Three (3) dial stations located at above studios.
f. One (1) speaker field supply unit located in PA Equipment Room.
g. One R.C.A. Victor Antenna-plex system consisting of:

1. One (1) RF-5003 Antensifier installed not over 20 feet from antenna.
2. One (1) R.C.A. Universal line filter, Type A, located adjacent to Antensifier.
3. R.C.A. Cobloy cable for wiring between Antensifier and basic amplifier cabinet.

719. The following equipment will be furnished by the Electrical Contractor and installed in the locations where directed:

1. One (1) Stanley & Patterson 20-lug terminal board with male connectors, to be located
2. behind Automatic phonograph in Studio 657.

2. One (1) lead-in bushing for antenna.

3. One (1) lightning arrester to be located at antenna entrance to building.

4. One (1) box with W.E. type 100 A terminal board located behind basic amplifier cabinet.

5. One (1) 100 foot antenna complete with 20 foot vertical supports, guy wire, insulators and fastening brackets.

6. All 2-pole and 3pole polarized receptacles shown on drawings for this system.

720. The wiring for this system is approximately shown on plans.

SIGNAL SYSTEM

721. The Signal System shall be furnished and installed complete with rigid conduit to outlet boxes, wiring, push buttons, buzzers, chimes, lamp indicators, transformers and the like.

122. The wire shall be equal to that hereinbefore specified for lighting except that same shall have a minimum size of #16.

123. Furnish a 250 Watt approved bell-ringing transformer, 120 volt, 60 cycle, primary, 12- volt secondary for operating the signals.

124. This transformer shall be installed in the Reactor Room and connected to panel "EM"

125. The signals shall all be as selected by the Engineer.

126. Where two or more buttons occur at one location, a suitable panel shall be furnished and each button provided with a cardholder.

127. The button stations hereinafter specified for the Stage Manager shall consist of a special flush panel having mounted thereon 24 Holtzer-Cabot #162006 locking buttons, 16-12 volt telephone bulls-eye lamp indicators, 1 Master button, two buzzers and card holders.

128. This panel shall be wired complete with terminal racks and arranged for individual and master operation. The panel shall set flush with D. C. panelboard equipment as shown in the details and shall be finished as directed.

129. All annunciator stations indicated on plans shall be flush type and contain the required number of 12 volt lamp indicators, push buttons and one buzzer with cut-out switch, all equipped with card holders and terminal racks.

130. This Contractor shall furnish and install the signal system as per the following schedule:

PUSH BUTTON LOCATION	SIGNAL LOCATION	TYPE OF SIGNAL Buzzer	Light
Stage Manager	Rear Booth	1	1
Stage Manager	Projection Booth	1	1
Stage Manager	Switchboard	1	1
Stage Manager	N. Spot Booth	1	1
Stage Manager	S. Spot Booth	1	1

Electrical
Metropolitan Square
Theatre #10.

PUSH BUTTON LOCATION	SIGNAL LOCATION	TYPE OF SIGNAL Buzzer	Light
Stage Manager	North Organ Console	1	1
Stage Manager	South Organ Console	1	1
Stage Manager	O. P. Stage	1	1
Stage Manager	P. Side Bridge	2	1
Stage Manager	O. P. Side Bridge	2	1
Stage Manager	Proscenium Flat. P.	1	1
Stage Manager	Proscenium Flat OP.	1	1
Stage Manager	"D" Cove	1	1
Stage Manager	Stage Floor	extension	extension
Stage Manager	Bridge "C"	1	1
Stage Manager	Bridge "E"	1	1
Stage Manager	Bridge "F"	1	1
Stage Manager	Bridge "G"	1	1
Stage Manager	Bridge "H"	1	1
Stage Manager	Public Rooms	5 Chimes	
Stage Manager	Conductor	1	1
Stage Manager	Projection Booth N.	1	1
Stage Manager	Projection Booth S.	1	1
Stage Switchboard	Spot Booth North	1	1
Stage Switchboard	Spot Booth South	1	1
Stage Switchboard	"D" Cove	1	1
Stage Switchboard	Projection Booth N.	1	1
Stage Switchboard	Projection Booth S.	1	1
Stage Switchboard	Side Bridge P.	1	1
Stage Switchboard	Side Bridge O.P.	1	1
Stage Switchboard	Proscenium P. & O.P.	1	1
Stage Switchboard	Stage Manager	1	1
Kino Booth	Stage Manager	1	1
Kino Booth	Switchboard	1	1
Conductor	Stage Manager	1	1
Conductor	Switchboard	1	1
Conductor	Projection Booth	1	1
Rear Booth	Stage Manager	1	1
Organ Console P.	Stage Manager	1	1
Organ Console	Projection Booth	1	1
Organ Console O.P.	Stage Manager	1	1
Organ Console	Projection Booth	1	1

Electrical
Metropolitan Square
Theatre #10.

CLYDE N. PLACE
CONSULTING ENGINEER
NEW YORK CITY

PUSH BUTTON LOCATION	SIGNAL LOCATION	TYPE OF SIGNAL Buzzer	Light
Side Bridge P.	Stage Manager	1	1
Side Bridge OP.	Stage Manager	1	1
"O" Bridge	Stage Manager	1	1
Proscenium Arch P.	Stage Manager	1	1
Proscenium Arch OP.	Stage Manager	1	1
Bridge "E"	Stage Manager	1	1
Bridge "F"	Stage Manager	1	1
Bridge "G"	Stage Manager	1	1
Bridge "H"	Stage Manager	1	1
Stage Extension	Stage Manager	1	1
Curtain Extension	Stage Manager	1 (separate)	1

One buzzer shall only be required at each signal station which shall be operated from the various push buttons listed for particular buzzer station.

All wiring shall be as approximately indicated on plans.

BURGLAR ALARM SYSTEM

The Burglar Alarm System shall be furnished, installed and wired complete by this Contractor and consist of the following:

One (1) Federal Sign Company's Type "A" or approved equal, exterior 120 volt, 60 cycle electric siren located over the Sixth Avenue Marquise and concealed from public observation.

Eight (8) wall type and ten (10) foot pedal type special approved switches for operating the siren and located as follows:

LOCATION	WALL SWITCH	FOOT SWITCH
North Ticket Booth	1	1
South Ticket Booth	1	1
Lobby Ticket Booth #1	1	1
Lobby Ticket Booth #2	1	2
Lobby Ticket Booth #3	1	2
Lobby Ticket Booth #4	1	1
Pay-off Room	1	1
Basement Vault	1	
Counting Room		1

CLYDE K. PLACE
CONSULTING ENGINEER
NEW YORK CITY

One (1) Flush eight (8) station lock drop annunciator with hand reset to be located in the Manager's office at Mezzanine.

34. The exact location of the above switches and annunciator shall be given in a later detail.

35. Service to this system shall be supplied from panel EM located in the Main Distribution Room and wiring shall be as shown on plans.

SEAT INDICATING SYSTEM

36. This Contractor shall furnish and install completely wired a seat indicating system for the entire Auditorium, including the three (3) Mezzanines and Orchestra Floor.

37. As a basis of estimating, this Contractor shall provide a Silmarjac Seat Indicator System, all to be as approved by the Engineer. This Contractor shall include in this estimate the sum of THIRTY-SIX THOUSAND DOLLARS ($36,000.00) one half of which EIGHTEEN THOUSAND DOLLARS ($18,000.00) shall be for equipment and the other half EIGHTEEN THOUSAND DOLLARS ($18,000.00) shall be for wiring, erection and complete connections.

38. The equipment shall include the following and all such other items as would be necessary to provide for a complete system:

a. Main annunciator mounted in a bronze metal floor standing tub of approved design, containing an indicator lamp for each Orchestra seat.

b. Three (3) bronze metal indicators for the upper Mezzanines, containing an indicating lamp for each of its respective seats.

c. Aisle fixtures mounted on the end standard of each row, containing seven (7) indicating lamps, designating each of the seats in its respective section and a flood unit for illuminating the aisle.

d. A program light mounted on each chair, complete with reflector and [illegible] contact switch.

e. Special chair switches for transmitting signals and raising all vacant seats.

f. Approved totalizing indicator on master station

with dial type signal sending stations on each mezzanine annunciator.

g. The lamps on the above annunciators are to be arranged to indicate an exact replica of the seating layout of their respective floors.

h. The entire system shall be operated on 6 volts and shall be complete with necessary stepdown transformers, switches and the like.

The wiring installation shall include the following:

a. Necessary ducts between the annunciators and the distribution points in the aisles.

b. Necessary conduit connections between the ducts and the aisle fixtures.

c. Metal mould raceways from the fixtures to each chair operating switch.

d. Complete wiring with special Bilmarjam cable between the annunciators and all equipment as hereinbefore mentioned.

739. The above serves only to describe the general arrangement of the installation. A more complete description of the equipment and wiring will be furnished in a later specification.

740. Equipment shall be installed as directed to the satisfaction of the Managers, Architects and Engineer.

TEMPORARY LIGHTING

741. This Contractor shall furnish and install a system of approved temporary weatherproof wiring, sockets, lamps and guards and maintain same at sidewalk bridges and overhead sheds on 50th Street, 51st Street and Sixth Avenue.

742. The above shall be as required by the City Regulations and ordinances.

743. The Contractor shall, upon notice from the Builder, remove the foregoing equipment as directed.

744. This Contractor shall furnish and install all the necessary temporary electric wiring for temporary lighting and power, consisting of wiring, switches, fuses, cutouts, sockets, etc., to permit illuminating all dark portions of the building as authorized hereinafter and operation of motor driven construction or operating equipment, so that all work may properly and visibly be carried on.

745. As a basis of estimating, the temporary lighting shall consist of the following risers complete with distribution panel located in the 51st Street Lobby:

a. One (1) 4 #2 wire riser 1½" conduit at North Dressing Room Section.

b. One (1) 4 #2 wire riser 1½" conduit at South Dressing Room Section.

c. One (1) 4 #4 wire riser 1¼" conduit at Lobby.

d. One (1) 4 #2 wire riser 1½" conduit at Column 301 for basement to studio.

e. One (1) 4 #2 wire riser 1½" conduit at Column 302 for basement to studio.

f. One (1) 4 #2 wire riser 1½" conduit at Column 349 for basement to studio.

g. One (1) 4 #2 wire riser 1½" conduit at Column 350 for basement to studio.

h. One (1) 4 #2 wire riser 1½" conduit for main ceiling and attic.

746. The following thru feed out-out panels shall be furnished for the above risers:

For a. riser twelve (12) 6 circuit panels.
For b. riser twelve (12) 6 circuit panels.
For c. riser five (5) 6 circuit panels.
For d. riser eight (8) 6 circuit panels.
For e. riser eight (8) 6 circuit panels.
For f. riser eight (8) 12 circuit panels.
For g. riser eight (8) 12 circuit panels.
For h. riser one (1) 24 circuit panels.

747. For the above panels the following extensions shall be furnished:

Seventy-five (75) - 50 ft. extensions.
Fifty (50) - 75 ft. extensions.

748. Each extension shall consist of two (2) #14 rubber covered approved wire with weatherproof block at one end and two (2) left hand weatherproof sockets at the other end.

749. Provide and install all the necessary temporary wiring, switches, fuses, cutouts, etc., for temporary power, required for sump pump, house pump, electric hod hoists, and for all necessary temporary elevator service under this contract that may be required, and as directed by the Builder.

750. All of the temporary light and power work shall be strictly in accordance with the rules of the New York Board of Fire Underwriters and of the Department of Water Supply, Gas and Electricity.

751. The Contractor under this contract shall maintain and keep the temporary light and power wiring in operation as the building progresses and at the completion of the work all such materials shall become the property of this Contractor who shall remove same from the premises.

752. The turning on and off of the temporary lighting and power switches shall also be included in the work of this contract, and no extra charges of any kind will be permitted for the operation of said switches, whether in regular time or overtime.

753. The Builder will apply for the temporary service connection and meter board and pay for current used, but this Contractor under this contract shall make all connections to meter board and extend feeders in rigid conduit to distribution point for control of temporary service in building.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

46. This Contractor shall furnish and install completely connected with necessary mountings, the following watt-hour meters:

Three (3) G. E. or approved equal type D.S. 19 3-phase watthour meters, each complete with two (2) separate current transformers, all for switchboard mounting, and as specified on a main distribution switchboard schedule for Air Conditioning Equipment.

Three (3) G. E. or approved equal type I-16 single phase 25 ampere 2 wire watthour meters to be enclosed in panelboard "T" as shown on schedule for private Preview Studios.

Three (3) G. E. or approved equal type D-14 3 phase watthour meters each complete with two (2) separate 75 amp. current transformers all enclosed in Power Panel "MG" as shown on schedule for private Preview Rooms motor generators.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

755. The Contractor shall submit his proposal in the form called for by the Managers, and this proposal shall be based on the kinds and qualities of materials and apparatus as heretofore specified.

756. The Contractor shall state the manufacture used as a base in his proposal and shall state the amounts to be added or deducted from said base for each of the other manufacturers or materials listed.

757. All materials and apparatus figured upon as a base, and included in the lists, shall be equal in all respects to that specified and shall be subject to the approval of the Engineer as tonquality, kind and performance.

758. The Contractor's attention is called to the fact that the manufacturers are listed alphabetically without indication as to preference, and that blank spaces have been provided for the insertion of additional manufacturers for which the Contractor desires to submit proposals.

	Add	Deduct
759. Lighting Panelboard Base Manufacturer Selected by Contractor._____		
a. Adams Elec. Co.	$_____	$_____
b. Bull Dog Electric Co.	$_____	$_____
c. General Electric (Trumbull)	$_____	$_____
d. Metropolitan Electric	$_____	$_____
e. Westinghouse Electric	$_____	$_____
f.	$_____	$_____
g.	$_____	$_____
760. Main Distribution Switchboard Base Manufacturer Selected by Contractor._____		
a. Adams Electric Co.	$_____	$_____
b. Bull Dog Electric Co.	$_____	$_____
c. General Electric (Trumbull)	$_____	$_____
d. Metropolitan Electric	$_____	$_____
e. Westinghouse Electric	$_____	$_____
f.	$_____	$_____
g.	$_____	$_____

		Add	Deduct
761.	**Power Panels and Switches** Base Manufacturer Selected by Contractor._____		
	a. Adams Electric Co.	$_____	$_____
	b. Bull Dog Electric Co.	$_____	$_____
	c. General Electric (Trumbull)	$_____	$_____
	d. Metropolitan Electric	$_____	$_____
	e. Westinghouse Electric	$_____	$_____
	f.	$_____	$_____
	g.	$_____	$_____
762.	**Toggle Switches** Base Manufacturer Selected by Contractor._____		
	a. Bryant Electric	$_____	$_____
	b. General Electric	$_____	$_____
	c. Hart & Hegeman	$_____	$_____
	d. Hubbell Electric	$_____	$_____
	e.	$_____	$_____
	f.	$_____	$_____
763.	**Base Receptalces** Base Manufacturer Selected by Contractor._____		
	a. Bryant Electric	$_____	$_____
	b. General Electric	$_____	$_____
	c. Hart & Hegeman	$_____	$_____
	d. Hubbell Electric	$_____	$_____
	e.	$_____	$_____
	f.	$_____	$_____
764.	**Combination Switch and Receptacle** Base Manufacturer Selected by Contractor._____		
	a. Bryant Electric	$_____	$_____
	b. General Electric	$_____	$_____
	c. Hart & Hegeman	$_____	$_____
	d. Hubbell Electric	$_____	$_____
	e.	$_____	$_____
	f.	$_____	$_____
765.	**Switch and Receptacle Plates** Base Manufacturer Selected by Contractor._____		
	a. Bryant Electric	$_____	$_____
	b. General Electric	$_____	$_____
	c. Hart & Hegeman	$_____	$_____
	d. Hubbell Electric	$_____	$_____
	e.	$_____	$_____
	f.	$_____	$_____

		Add	Deduct
766.	**Outlet Boxes** Base Manufacturer Selected by Contractor._____		
	a. Appleton Electric Co. b. Central Tube Co. c. General Electric d. Thomas & Betts e. Walker Brothers f. . . . . . g.		
767.	**Exposed Conduit Fittings** Base Manufacturer Selected by Contractor._____		
	a. Appleton Electric Co. b. Crouse-Hinds c. General Electric d. Veco Mfg. Co. e. . . . . . f.		
768.	**Bells, Buzzers, Pushers, Transformers, Etc.** Base Manufacturer Selected by Contractor._____		
	a. Auth Electric Co. b. Edwards Electric Co. c. General Electric d. Holtzer-&-Cabot e. Stanley & Patterson f. . . . . . g.		
769.	**Cable Supports and Taps** Base Manufacturer Selected by Contractor._____		
	a. Dossert Electrical Co. b. Frankel Connector Co. c. O-Z Cable Support Co. d. Russell & Stoll e. . . . . . f.		
770.	**Conduit Plugs or Bushed Caps** Base Manufacturer Selected by Contractor._____		
	a. O-Z Cable Support Co. b. Thomas & Betts c. . . . . . d.		

	Add	Deduct
Fuses (One Time)		
Base Manufacturer Selected by Contractor.		
a. National Code		
b.		
c.		
Fuses (Renewable)		
Base Manufacturer Selected by Contractor.		
a. Bussman		
b. Economy		
c. Great Western		
d. Trico		
e. Union		
f. Star		
g.		
h.		
Electric Clock System		
Base Manufacturer Selected by Contractor.		
a. Electric Time Co.		
b. General Electric		
c. Hammond Clock Co.		
d. Howard Electric Clock Co.		
e.		
f.		
Stage Lighting Equipment		
Base Manufacturer Selected by Contractor.		
a. Hub Electric Co.		
b. Kliegl Universal		
c. Major Stage Equipment Co.		
d.		
e.		
Reflectors		
Base Manufacturer Selected by Contractor.		
a. Frink Electric Co.		
b. Pittsburg Reflector Co.		
c. X-Ray Reflector Co.		
e.		
f.		

Add Deduct

II. Stage Switchboard
Base Manufacturer Selected by Contractor._____

a. General Electric - 5 scene
b. General Electric Double Dual System with 12 supplementary Masters
c. Hub Electric - 5 scene
d. Hub Electric - 10 scene
e. Westinghouse Electric - 5 scene
f. Westinghouse Electric - 10 scene
g. . . . . .
h. . . . . .

III. Motor Generators
Base Manufacturer Selected by Contractor._____

a. General Electric
b. Roth Mfg. Co.
c. Westinghouse Electric
d. . . . . .
e. . . . . .

IV. Intercommunicating Telephones
Base Manufacturer Selected by Contractor._____

a. Automatic Electric Co.
b. North Electric Co.
c. . . . . .
d. . . . . .

Electrical
Metropolitan Square
Theatre #10

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

70. For the purpose of material and workmanship adjustments on electrical changes, the Electrical Contractor shall list n his proposal, in the form hereinafter given, the additions nd deductions on a unit price basis of the items to follow. t is understood that all material and sundries are included and he prices given apply to the materials used with cost of labor ubject to adjustment. All measurements and checking of material hall be made at time of installation.

80. **Conduit Only:**

Per foot		1/2"	....	____¢
Per foot		3/4"	....	____¢
Per foot		1"	....	____¢
Per foot		1 1/4"	....	____¢
Per foot		1 1/2"	....	____¢
Per foot	1/2" x 3"	Underfloor duct		____¢

81. **Wire Only - Single:**

Per foot	No. 16	....	____¢
Per foot	No. 14	....	____¢
Per foot	No. 12	....	____¢
Per foot	No. 10	....	____¢
Per foot	No. 8	....	____¢
Per foot	No. 6	....	____¢

82. **Switches and Pluge**

Per local switch and box	....	____¢
Per base plug and box	....	____¢
Per floor plug and box	....	____¢

83. **Outlet Boxes, Cover and Fixture Support:**

Per ceiling	....	____¢
Per bracket	....	____¢
Per base	....	____¢
Per floor	....	____¢
Per telephone strip box on column	....	____¢
Per underfloor junction box (single duct)		____¢
Per underfloor crossover box (single duct)		____¢

NOTE:

754. The word "sundries" shall include such material as bushings, lock nuts, elbows, screws, straps, solder, tape, couplings, supports and plates; to which should be added overhead and profit.

extra flexible asbestos cable and connectors, lugged to fit burner and booster switch and ten (10') feet of 3 conductor stage cable, one end lugged to fit booster switch, the other end equipped with a 3 pole connector to fit DC supply box on towers. Supply box included in Electrical Contract.

PROSCENIUM SPECIAL ARC SPOTS

31. Furnish four (4) 100 ampere Special Arc Spotlights in exact accordance with that specified for 150 ampere Arcs except as noted in the following:-

1) Lenses shall be heat resisting 8" in diameter.

2) Shall be arranged to be mounted one above the other, two (2) on the right side and two (2) on the left side of Stage.

Note: All lenses of the same focus shall be accurately matched.

SCHEDULE OF SPECIAL ARC SPOTLIGHTS

Location	No. Req.	Distance from Curt.	Distance from Cyclor.	Supports for each	Maximum Inclination Down	Maximum Inclination Up	Total
Projec. Booth.	4	175	225	Pedestal base.	45°	15°	60°
Spot Booth N.	4	175	225	Pedestal base & Overhead Suspension	45°	15°	60°
Spot Booth S.	4	175	225	" "	45°	15°	60°
D-Cove	6	95	150	Overhead Suspension	65°	15°	80°
Side Bridge P.	3	Across Stage		Pedestal & Overhead Suspension	55°	50°	105°

Electrical Equipment.
Metropolitan Square.
Theatre No. 10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Location	No. Req.	Distance from Curt. Cyclor.	Supports for each	Maximum Inclination Down	Up	Total
Side Bridge OP	3	Across Stage	Pedestal & Overhead Suspension.	55°	50°	105°
Upper Bridge	2	" "	Pedestal Base	65°	40°	105°
Towers	6	" "	Rail Mounting	45°	55°	100°
Prosc.(*)	4	" "	Upright Pipe Mounting	45°	45°	90°

32. (*) These spotlights shall be of 100 ampere capacity, equipped with 8" diameter lenses; all others to be 150 ampere capacity and equipped with 10" diameter lenses.

33. All spotlights to be equipped with douser shutter control.

STAGE STANDARD ARC SPOTS

34. Furnish four (4) 70 ampere Kliegl or approved equal standard hand feed arc spot lamps, each complete with 6" Fish-Shurman heat resisting lenses, iris diaphragm, telescopic stand, 110 volt 30-70 ampere rheostat, asbestos wire connector, booster switch and 50 feet #4 stage cable with free end lugged to fit 100 ampere 2 pole plug.

35. The Iris diaphragm shall be a part of the lamphouse and shall be operated from front and rear of hood. The hood shall have a double baffle. Each spotlight shall be equipped with a Kliegl #879 or approved equal truck.

36. Furnish four (4) 100 ampere Kliegl or approved equal spot light complete with 8" diameter Fish-Shurman heat resisting lenses, yoke supports, telescopic stand 110 volt 50-100 ampere rheostats, booster switches, Iris diaphragms, completely wired with asbestos wire, connectors and 50 feet of #1 stage cable with free end lugged to fit 100 ampere 2 pole stage plug and roller truck.

Electrical Equipment.
Metropolitan Square.
Theatre No. 10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

SYNOPSIS SPECIFICATION

for the

ELECTRICAL SYSTEM

NOTE

This synopsis specification is intended for estimating purposes only, not for contract work.

GENERAL DESCRIPTION OF BUILDING

This building will consist of two sections, an Office Building Section and Theatre Building Section.

The building will be constructed as a thoroughly fireproof structure. The framing will be of steel skeleton construction and the enclosing walls will be carried on the steel. The floor construction will be reinforced cinder concrete arch, with cinder fill and cement finish.

The Office Building Section is to be designed for use as a high class office building, with rental offices in upper part of building and the lower portion to be used for Stores, Banks, Restaurants and the like, with general service quarters together with the mechanical equipment for operation of this section in Basement. This section is planned for thirty-one (31) stories and Pent Houses above ground and Basement below ground.

The Theatre Building Section is to be designed for use as a high class Variety Theatre to take care of any type of stage or screen entertainment. It is planned for a seating capacity of approximately six thousand (6,000) seats, with three balconies and Pent Houses above Ground and Basement and Sub-Basement below Ground. The general service quarters together with the mechanical equipment of this section will be in the Basement and Sub-Basement with the exception of Air Conditioning and Exhaust Systems, which will be in the upper portion.

ENERGY

The Electrical Energy will enter in Basement at 2300 volts and extended with special cables in conduit to transformer bank in space assigned for this service in Basement where the Energy will be stepped down to the operating voltage for Light

CLYDE H. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Sheets - 22.

Synopsis Specification
Electrical System
Metropolitan Square
Building No. 10
Office & Theatre Sections

June 22nd, 1931.

and Power. The low voltage distribution will be 3 phase, 4 wire 120/208 volt, 60 cycle for Light and 208 volt, 3 phase, 3 wire, 60 cycle for Power.

Recording watthour meters will be provided in transformer rooms for recording current consumption.

WORK NOT INCLUDED

Lighting Fixtures.
Motors.
Controllers and Rheostats.
Tank Switches.
Reflectors.
Public Address Equipment.
Projection Machines.
Spot Lights.
Television Equipment.
Gong Panel.
Elevator Swing Cables.
Flood Lighting Units.
Meter Loops.
Telephone Wiring and Instruments.
Oscillating Fans.

WORK INCLUDED

High Tension Stepdown Transformers. (Furnished by owner)
High Tension Switching Equipment.
Network Switches, Instrument and Control Equipment.
Feeder Distribution Switchboards.
Light and Power Panels.
Conduit, outlet, junction, pull and cable support boxes for Light, Power, Western Union, Flood Lighting, Telephone, and the like.
Steel Underfloor Duct System.
Fire Alarm Standpipe Signal System.
Watchman's Clock System.
Stage Switchboard.
Stage Lighting Equipment.
Motor Generators (Stage, Projection and Spot Light Booths)
Overhead Floodlights (Theatre)
Stage Co. Switches.
Organ Conduit System.
Aisle Lights.
Intercommunicating Telephones.
Carriage Call.
Public Address Conduit System.

Handling of motors & Controls
Usher Signal Syst

Projection Room Wiring and Conduit.
Television Conduit System.
Hold-up Alarm System.
Marquis Sign Lighting.
Electric Clock System.

DESCRIPTION OF ELECTRICAL SYSTEMS

The Electrical Energy will be metered in Transformer Rooms in Basement of the building and then carried to the distribution switchboards and therefrom distributed throughout the building by separate feeders for Light and Power uses. The circuit wire distribution for Light from the light panels will be 3 phase, 4 wire same as feeders for Office portion of the building.

There will be separate transformer banks for the Office and Theatre portion of the building which shall be in single phase units connected Delta Primary and Star Secondary. Number of units and KVA based on 70% of the connected load completely connected up with all disconnects, wiring, frame work, reactors, and protective devises in accordance with best engineering practice, complete ready for operation.

The Electrical System shall be of the type and character best suited for a high grade office and theatre building and adequate for supplying electrical energy for Light and Power to all points of consumption.

Metering type panels will be used for the office porition of the building and provision made for metering the various rental spaces for stores and the like in the lower portion of the building when it has been definitely determined to what use these spaces are to be put. The entire wiring system and cable installation shall be in standard weight rigid conduit galvanized.

Wire Shaft
Generally, there will be vertical shafts up through the Office portion of the building with closets on each floor for electric panels and telephone interconnecting boxes and splices with conduit distribution therefrom.

The high tension hook-up shall be similar to the United Electric Light & Power Co's requirements shown on their drawing No. 8085 service location #1.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

ILLUMINATION

Note: A typical arrangement for the Electrical System and Telephone System on the typical office floor is shown on plan accompanying this specification.

Offices

A standard type of illumination will be installed in the offices throughout the building. Sufficient ceiling outlets symetrically placed will be provided so that an average of 2-1/2 watts per square foot at desk height will be available in the offices. The ceiling lights will be controlled by combination switch and receptacle located on the interior columns. Base plugs will be provided in the exterior walls and the interior columns.

Corridors

There will be one ceiling outlet in each bay and these outlets will be on alternate switch control with key switches at intersection of corricors and elevator lobbies based on 1 watt per square foot.

Locker Rooms and Help's Quarters

There will be provided alternate ceiling lighting on switch control for aisles and ceiling lights with pull chain control between lockers. These outlets to be approximately ten (10') feet on centers.

Stair and Exit Lighting

There will be provided a ceiling outlet in each landing, controlled from light panel in basement. All exit lights will be located over doors to stairways and controlled separately from stair panel in basement.

Stores, Banking Quarters or Restaurants

These spaces will be provided with conduit and panel boards only of sufficient capacity to provide for the necessary electrical systems in these quarters when definite arrangement has been made as to their use.

General

In Basement, service rooms, machinery rooms and non-rental rooms, ceiling outlets of not over 100 watt capacity each shall be provided and in sufficient number and distribution to give 1 watt per square foot lighting intensity and sufficient receptacle outlets for trouble lamp cord extension.

All such circuits shall be #12 B & S minimum. Full load voltage drop in all cases shall not exceed 4 volts.

All areas such as service rooms, attic, bask stage and the like, not having public access shall have special wire guard receptacle outlets.

TELEPHONE SYSTEM

There will be shafts up through the building, first floor and above, a slot will be provided in the floor slab in these closets for the Telephone Co's cables and Western Union Co's cables. Conduits will be provided for the Telephone Company and Wester Union from the first floor closets to the main telephone room and Western Union interconnection space in basement.

The distribution of telephones on the office floors will be in conduit from the wire shafts to the various junction boxes and underfloor duct system and outlets on the office floors. Western Union wiring will be run exposed on the different floors as needed.

The underfloor ducts for low tension and telephone will be Walker pre-insert steel duct 3" x 1-1/2" with hunction boxes, cross-over boxes and fittings. — G.E. fibre duct

A general system of telephone outlets will be installed as required for the lower rental spaces of the building and telephone booths in public spaces and for Ticket Office and Management.

The Telephone Company and Western Union and other Utility Companies will enter from the street service and extend their cables to the basement interconnecting rooms for distribution to all parts of the building.

INTERCOMMUNICATING TELEPHONES - THEATRE

Furnish and install completely wired an Automatic Electric Co's No. 5 P.A.X. or equal system of intercommunicating telephones complete with switchboard, seventy-five (75) telephone sets as selected, and features providing for Conference and Executive Right of Way.

Furnish and install an additional interphone system complete with head phone sets for communication between the console and each organ loft.

Furnish and install a Dictaphone System of interphones in Executive Offices.

To stage
Mach Rm
Booth

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Synopsis Specification
Electrical System
Metropolitan Square
Building No. 10
Office & Theatre Sections

FIRE ALARM - OFFICE SECTION

The Fire Alarm System shall meet requirements of the City Department with stations, gongs, telephones, strap keys and control equipment.

FIRE ALARM AND WATCHMAN'S TOUR - THEATRE

Furnish and install a complete system of conduit and wiring for an approved Edwards Signal Fire Alarm System and A.D.T. Watchman's Tour System.

WATCHMAN'S CLOCK SERVICE - OFFICE SECTION

Adequate Watchman's Clock System in the building of the Morse Magneto Co's make with key stations of flush type and three portable clocks in addition to fourteen electric stations and duplicate recording instruments and telephone switchboard of Auto-Call Co's make, complete with operating equipment, wiring, conduit, outlet, pull and panel boxes.

ELECTRIC CLOCK SYSTEM - THEATRE

Furnish and install a complete system of Telechron or equally approved electric clocks complete with reset device.

The system shall consist of approximately seventy-five (75) clocks of types including flush, mantel and semi-flush construction and of various dial sizes all as selected.

PUBLIC ADDRESS SYSTEM - THEATRE

Furnish and install a complete installation of conduits and special wiring for the Public Address System and include the mounting and installation of the equipment furnished by the Public Address Contractor.

CARRIAGE CALL SYSTEM - THEATRE

Furnish and install a Kliegle No. 783 or equal Carriage Call System complete with a three number 0-999 call annunciator and one call switch of the selector button type.

HOLD-UP SYSTEM

Furnish and install an approved Hold-Up Alarm System complete with wiring, two sirens, twelve (12) foot and twelve (12) button switches and one annunciator.

SPRINKLER ALARM SYSTEM - THEATRE

Furnish and install all wiring for the Sprinkler System and mount all electrical equipment including alarms, valves, annunciator and the like. Said equipment being furnished by the Sprinkler Contractor.

SIGNAL SYSTEM - THEATRE

Furnish and install the following signal systems complete with buttons, buzzers, annunciators, transformers, and the like.

"Dressing Room System" consisting of call buttons, return buzzers and lamp annunciator at stage. to dressing rooms - miscellaneous rooms - organist & leader.

"Operating System" consisting of buttons and lamp signals between stage, pit and each projection room machine.

SLEEVES

All necessary wall sleeves for cables for the different systems at the street entrance through the retaining walls shall be provided.

CONDUIT

All conduit shall be of soft steel full standard weight and have a heavy galvanized coating, enameled internally with an approved flexible exterior finishing coat. Enameling and galvanizing shall not crack or flake when the conduit is bent at angles on a radius equal to eight times it s inside diameter. The conduit shall be of the National Metal Moulding Co's make known to the Trade as "sheraduct". 3/4" conduit minimum for circuit work. or equal. (G.E. White duct) coated.

WIRES AND CABLES

All wire and cable shall be refined copper, properly tinned. The insulation shall be of the dimensions required by the Code of the National Board of Fire Underwriters and shall be of the quality known as "Intermediate Grade".

Wire shall be of A-A manufacture, color coded. or equal?

No wire smaller than No. 14 shall be used for lighting work and all branch wiring shall be rubber covered single braid, single wire for less than 100' runs and No. 12 wire for all runs over 100'.

For large feeders 500,000 cm. in 3-1/2" conduit will be the maximum sizes permitted.

Electric wiring shall be run through galvanized iron conduit of approved make.

All cove lighting and all stage wiring circuits shall be not less than #12

PANELS

Cabinet for distribution panels shall be of heavy black sheet metal and panels shall be of the safety type unless otherwise agreed upon. Doors and trim shall confrom to the Architectural requirements of the location.

All panels for the offices up through the building shall be of the metering type known as the "Eastern Office" panel.

For the Theatre Section "dead front" 30 ampere, 125 volt toggle switches and plug fuses in branches with mechanical or magnetic main line switches as required. Power panels shall be of the Bull Dog Co's Saf-to-fuse construction complete with bux-bars, branch bodies and fused hhads.

Sign panel all contractors

SWITCHES

All switches shall be toggle type of H & H make, catalogue No. 4281 with heavy struck-up brass plates .06" thickness.

BASE RECEPTACLES - INDIVIDUAL

Receptacles shall be single plug H & H No. 7724 with heavy struck-up brass plates . 06" thickness and for double plug No. 7725 as required by location.

BASE RECEPTACLES - COMBINATION WITH SWITCH

These receptacles shall be H & H No. 1654 and used on free-standing columns and interior walls where indicated by symbol on plans.

SPECIAL RECEPTACLES

These are to be of H & H make heavy duty suitable for vacuum cleaning machines, hand dryers in toilets, electric fans and other purposes.

AISLE LIGHTS

Furnish and install receptacles and wiring to each aisle seat standard at all floors.

OUTLET BOXES

All boxes shall be of the Walker Black enameled concrete type with removable cover. For receptacle and switch boxes Appleton make.

G.1

FITTINGS

All bushings, couplings and the like, shall be black enameled malleable iron. G.I.

TANK SWITCHES

Electrical Contractor shall furnish all wiring and conduit and connect up all tank switches and pump controls supplied under the Plumbing Contract.

WORK OF OTHERS

Electrical Contractor shall furnish all wiring and conduit and connect up all fan, pump and other power motors through their control to these motor lugs excepting the elevator motors. Here the Electrical Contractor with his service box and panel for the elevator bank control with switches for each elevator will be made ready for Elevator Contractor's connection. Furnish all wiring and conduit equipment for signal elevator machines, alarm circuits for pressure valves, automatic louvers, fan alarm and remote control equipment.

POWER FEEDERS

Feeders for all motor power uses shall be provided of sufficient size to keep the voltage drop not over 10 volts under extreme load conditions.

Separate feeders with main switchboard control shall be used for pumps, fans and elevators.

TE Circuit breakers to be provided at all switchboards for each bank of 4 elevators, and any main feeder over 600 ampere operating load.

FIXTURES

No lighting fixtures are included in this contract, except hereinafter called for in Theatre, but all outlets intended for lighting fixtures shall have the box and wiring therein arranged for future fixture connections.

PAINTING

The Electrical Contractor will do the following Painting:

All surfaces to be painted shall be first cleaned of all foreign matter and made suitable for the coat of paint.

The paint shall consist of the best grade of lead and oil of approved color and tint, and two coats shall be applied to all surfaces of the following material and apparatus:

Service Panels and Switchboards.
Main service panel and mountings.

Outlet Boxes and Conduits
All exposed conduits, outlet boxes, fittings, accessories and hangers.

Boxes
All exposed panel, pull, junction and transfer boxes.

Meters
All mounting boards and meters and their supporting frames.

DISTRIBUTION SWITCHBAORD - THEATRE

Furnish and install in the Distribution Room adjacent to the transformer vault, an approved safety type dead front totally enclosed switchboard for the distribution of the lighting and power feeders. I.T.E. circuit breakers of Multumite and Hingite construction shall be provided on this switchboard for main lighting, main power and stage, auditorium and refrigeration feeders. These breakers shall have "Auto-ite" and "Dialite" features.

SWITCHBOARD - OFFICE SECTION

The building switchboards controlling all light and power feeders throughout the building shall be made of 2" black satin finish "Pyhren" slate mounted on angle and tee iron frame work 1-1/2" x 2-1/2" x 1/4" and 1-1/2" x 1-1/2" x 1/4" tie rods to wall 5'-6" long.

The bottom of switchboards shall have a 12" high wire grille No. 14 wire 1-1/2" diamond mesh.

Top of board shall have a No. 10 gauge transfer box 3'-0" square and full length of board with access doors on front and bottom.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

All switches shall be back-connected knife type 800 amperes per square inch with spade handles. Fuses on front of board up to and including 400 amperes, all sizes above this shall have fuses on slate base, back of board with copper link fuses.

All switches shall be double pole, neutral on light section shall be solid(unfused) but with test links on slate base back of board for connection to bus.

All circuit breakers shall be I.T.E. of Cutter Electric Co's make auto-dalite feature non-closeable on overload. Fuses front of board shall be "Trico" renewable cartridge type.

Switches shall have ample electrical and mechanical clearance crowding of switches by mounting same polarity switch studs together, will not be permitted.

Buses on board shall be so arranged that the load can be divided to agree with meter arrangement. The switchboards shall be of the Metropolitan make.

STAGE SWITCHBOARD

The system shall be equipped for dual operation consisting of a "Pre-set Selector Control" and a "Rehearsal Control". for all auditorium and stage lighting control.

The "Pre-set Selector Control" shall provide means for presetting at least ten (10) multi-color scenes in advance of their presentation and to include at least twenty (20) degrees of illumination intensity simultaneously with any or all of the pre-selected scenes. This control shall provide means for proportional dimming, dimmer speed regulation and dimmer reverse motion.

The "Rehearsal Control" shall provide switch and dimming for independent, color group and color combination operations.

Means shall also be included for extended controls of the dual system.

The pilot control board shall be of the console switchboard construction as selected and located where directed.

The system shall be of the "Electronic Tube" type and shall function as per the above specification to the satisfaction of the Owners, Architects and Engineer.

Include resistance and reactor type - F. A. Co.

BORDER LIGHTS

The border lights shall be Frank Adams, Hub Electric or approved equal and shall consist of unit reflectors built into a continuous metal trough and wired alternately for four (4) colors. The following borders shall be furnished and installed to stage rigging and controlled at stage switchboard with reactor dimmer controls.

Border	Total Units	Unit Watts	Work Lights	Total Circuits	Swbd. Control
Val. C	70	300			
	24	500	2	50	4
D	23	300			
	90	500	2	51	4
E	23	300			
	90	500	2	51	4
F	23	300			
	90	500	2	51	4
G	23	300			
	90	500	2	51	4
H	23	300			
	90	500	2	51	4

Cyclorama K - See Light Bridges.

All borders to be single row with frames and colored glass mediums as selected. Provide 3-way control and reactor for all work lights. (individually)

OVERHEAD LIGHT BRIDGES

Furnish and install on the Light Bridges located over their respective borders, pin plugs, connectors and arc pockets as indicated in the following schedule. Wiring to pin plugs shall be run in a continuous metal trough as directed. Arc pockets shall be Kliegle 100 ampere or equal as approved.

capacity 2000 w

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Bridges

	C	D	E	F	G	H
	40	56	56	56	56	56
Color Pin Plugs	8	4	4	4	4	4
Color Swbd. Controls	8	4	4	4	4	4
Color Reactors	3	6	6	6	6	6
Indep. Pin Plugs	3	6	6	6	6	6
Indep. Swbd. Controls	3	6	6	6	6	6
Indep. Reactors	0	1	1	1	1	1
D.C. Arcs	0	1	1	1	1	1
Arc Swbd. Control	2	4	4	4	4	4
Up Work Lights						

Reactors for above shall be based on 2000 watts for each pin plug.

Bridge "K" shall be arranged in three rows for cyclorama lighting and one underside row for a down curtain light with pin plugs for each unit as follows:

		Amber	Green	Red	Blue	D. L.
1st Row -	Units	12	12	12	12	12
	Watts	500	750	750	1,000	750
	Circs	4	6	6	12	6
	Swbd.Con.	1	1	1	1	1
	Reactors	6,000	9,000	9,000	12,000	9,000
2nd Row -	Units	12	12	12	12	12
	Watts	750	1,000	1,000	1,500	1,000
	Circs	6	12	12	12	12
	Swbd.Con.	1	1	1	1	1
	Reactors	9,000	12,000	12,000	18,000	12,000
3rd Row -	Units	12	12	12	12	12
	Watts	1,000	1,500	1,500	2,000	1,500
	Circs	12	12	12	12	12
	Swbd.Con.	1	1	1	1	1
	Reactors	12,000	18,000	18,000	24,000	18,000
Underside -	Units	9	9	9	9	6(Indep)
	Watts	2,000	2,000	2,000	2,000	2,000
	Circs	9	9	9	9	6
	Swbd.Con.	1	1	1	1	6
	Reactors	18,000	18,000	18,000	18,000	2,000

Provide where directed on Bridge "K" nine 2 wire and nine 5 wire plugs for operating nine (9) cloud and effect machines with Selsyn motors. Plugs to be controlled by three (3) switchboard and three 6,000 watt dimmer controls for lamps and three switchboard controls for effect motors.

The furnishing and installing of lighting units for the bridges will be provided for under a separate specification.

SIDE LIGHT BRIDGES

Furnish and install on each of the two (2) side Light Bridges the following pin plug connectors complete with wiring and metal troughing:

Fifty (50) receptacles on 50 circuits, 50 control and 50 - 2000 watt reactors for side lights.

Eight (8) receptacles on 8 circuits, 4 controls (one per color) and four 4000 watt reactors for proscenium lights and located on the down stage end of each side bridge.

BORDER CABLES

Each border including the light bridges shall be equipped with an approved stage cable containing the number of flexible conductors (2 per circuit) previously mentioned. Each cable shall extend from gridiron pull boxes to five feet above stage and connected to the borders. They shall be provided with cradles and insulators. Size of conductors shall be #10 B & S Gauge. (104 - #30W extra flexible stranded)

FOOTLIGHTS

Footlights in the stage apron shall be wired and equipped for the following 100 watt aluminum triangular reflector units 5" o.c. with glass color mediums.

84 Whites on 7 No. 12 wire circuits.
84 Ambers " 7 No. 12 " "
84 Greens " 7 No. 12 " "
84 Reds " 7 No. 12 " "
84 Blues " 7 No. 12 " "

The trough shall be 90 feet long, curved, double row and equipped with ten (10) pin plug connectors on five (5) switchboard and reactor controls.

Footlights to be arranged in disappearing recess as directed.

CYCLORAMA FOOTLIGHTS

Provide in stage recess at cyclorama fourteen (14) 8'-0" long special double row footlight strips with twenty-four (24) 200 watt reflector units wired for four colors. Each strip shall connect to a special four gang splicing box in recess. Provide four (4) switchboard controls for all strips. Total per color eighty-four (84) 200 watts on fourteen (14) No. 10 wire circuits.

FALSE PROSCENIUM PIN PLUGS

Furnish and install at each side of the false proscenium opening, back stage, the following pin plug connectors completely wired.

Eight (8) receptacles on 8 circuits, 4 controls (one per color) and four 4000 watt reactors.

MUSICIANS' PIT RAIL LIGHTS

Furnish and install in recess provided at the top of the rail around the musicians' pit a continuous four color wiring trough complete with 500 watt pin plug receptacles 12" o.c. These receptacles to be controlled by ten switchboard and reactor controls.

STAGE POCKETS

The followihg stage pockets shall be furnished and installed as directed.

Sixteen (16) four gang Kliegle #354 or equal incandescent pockets on fourteen (14) switchboard and reactor controls for each of four colors.

Four (4) Kliegle #351 or equal incandescent pocket in cyclorama footlight recess on four (4) switchboard and reactor controls.

Two (2) Kliegle #352 or equal incandescent pockets at gridiron on two switchboard and reactor controls.

Fourteen (14) Kliegle #352 or equal double 50 ampere arc pockets on stage floor.

Six (6) Kliegle #352 or equal double 50 ampere arc pockets for overhead bridges.

Five (5) Kliegle #352 or equal double 50 ampere auxiliary arc pockets on right side bridge.

Four (4) Kliegle #352 or equal double 50 ampere arc pockets for false proscenium.

Twenty (20) Kliegle or equal 150 ampere single arc pockets for side bridges, ten per bridge.

All pockets shall be of the illuminated type with bulls eyes color lens indicators.

D.C. STAGE MOTOR GENERATORS

Furnish and install completely wired the following remote controlled Westinghouse or equal approved motor generator sets complete with auto-compensators, control stations and instrument panels.

Two (2) 150 KW sets for Side Bridge D.C. Arcs.

Two (2) 50 KW sets for Overhead Bridges and Stage Floor D.C. Arcs.

STAGE D.C. SWITCHING AND MAGAZINE PANELBOARDS

Furnish and install two back connected panelboards for the distribution of the D.C. Stage pocket circuits consisting of 200 ampere D.P.D.T. fused switches for each 150 ampere and for each four 50 ampere pockets.

A magazine panel shall also be furnished and installed as an integral part of one switch panelboard and contain fuse branches for the 50 ampere pockets.

Furnish and install four (4) main line contactors on the stage contactor switchboard with black out control on the pilot board.

Furnish and install complete wiring and framework for rheostats furnished with the above arc spot machines.

OVERHEAD SPOT FLOODS

Furnish and install a system of musicians' pit flood lighting consisting of:

Sixty (60) 2000 watt remote operated Kliegle multi-color spot-floods.

Twelve (12) switchboard and reactor controls with color group and master controls for the shutters.

Shutter operation to be accomplished by Selsyn Motors with individual and collective controls.

STAGE COMPANY SWITCHES

Furnish and install three (3) 400 ampere company switches for the stage, each consisting of a 3 pole, 4 wire Bull Dog Co's "Saf-to-fuse" body with three separate heads fused for 100, 200, and 400 amperes.

ORGAN CONDUITS

Furnish and install a complete system of empty conduits for the organ installation. Install the necessary remote controlled starter and wiring for the organ blower motor. ?

MUSICIANS' OUTLETS

Furnish and install for musicians' stand lighting one hundred and twenty-five (125) 5 ampere pig-tail connectors with outlet boxes and flush covers on 16 circuits. Provide one 3-way switchboard control and one reactor control at the switchboard.

AUDITORIUM

Furnish a complete system of four (4) color decorative and one (1) color emergency wiring that shall conform to the requirements of the architectural treatment and installed to the satisfaction of the Owners, Architects and Engineer. Fixtures will be furnished and installed under another contract. ?

All fixed fixtures shall be substantially provided for with proper supports.

All cove, recess and feature lighting shall be wired alternately for four colors and each receptacle shall be provided with an X-ray or equally approved reflector unit or floodlight as required. ?

Sufficient switchboard and dimmer controls shall be provided for each color of illumination and for each lighting group as directed by the Engineer.

DRESSING ROOM WIRING

Provide in each dressing and chorus room one duplex receptacle for lighting of each two dressing tables, one single receptacle for heating appliances for each three tables. Separate circuits shall be provided for light and heat.

All dressing room outlets shall be supervised by door bolt and local switch control with special panel in door man room for remote disconnection and indication of these outlets. An additional lamp annunciator shall be provided at the stage to indicate occupancy of these rooms. The above as per Engineer's details. ?

PROJECTION BOOTH EQUIPMENT

Furnish and install a complete system of wiring and equipment in the Projection Rooms to provide for the complete operation and installation of the following machines furnished by Others.

Five (5) 250 ampere projection machines.
Four (4) 180 ampere spot machines.
Two (2) double 125 ampere effect machines.

The equipment shall include the furnishing of the following:

Two (2) 50 KW Westinghouse (SK-SC) motor generator sets complete with remote controlled compensators and instrument panels.
One (1) D.C. Panelboard with double throw switches for each machine in booth and at auditorium. ?
Five (5) instrument panels for projectors.
Four (4) instrument panels for spots.
Two (2) instrument panels for effects.
Six (6) wall pockets for spot and effect machines.
One (1) angle iron framework for 15 rheostats (by Others).

AUDITORIUM ARCS

Furnish and install as directed wiring to forty (40) 150 ampere spot machines located in booths in the attic area over

the main auditorium ceiling. All wiring to be #2/0 and terminate in Kliegle or equal wall pockets and ammeters.

Furnish and install six (6) 75 K.W. Westinghouse or equally approved motor generators complete with remote controlled compensators and instrument panels.

Furnish and install D.C. panelboards for the distribution of these circuits.

Furnish and install complete wiring and necessary switches for operating remote controlled shutters at each auditorium spot light booth.

SOUND PROJECTION SYSTEM

Furnish and install a complete installation of conduits and special wiring for the Sound Picture Projection System and include the mounting and installation of the equipment furnished by the Sound Equipment Contractor.

TELEVISION AND OTHER DEVELOPMENTS

Furnish and install a complete installation of conduits and special wiring for the Sound Picture Projection System and include the mounting and installation of the equipment furnished by the Sound Equipment Contractor.

MARQUISE AND SIGN LIGHTING

Furnish and install a complete system of wiring for the Marquise and Sign Lighting complete with special remote control panels and push button operating stations.

Include the necessary receptacles, reflectors and wiring troughs for the marquise soffit to conform with the requirements of the architectural design.

The total sign load shall be based on the following connected loads which shall be controlled by magnetically operated switch in sub-division not exceed 100 ampere, 3 phase.

Upright Signs (Letters)	- 75 KW
Marquise and Sign Borders	- 150 KW
Marquise Attraction Signs	- 75 KW
Miscellaneous Signs	- 50 KW

Special provisions shall be included for sign annimation equipment furnished by Others.

Furnish and install required receptacles, reflectors and the like for lighting of display frames.

SEAT INDICATING SYSTEM

Furnish and install completely wired an approved Seat Indicating System complete with the following equipment:

Thirty-Two (32) Usher Sending Stations.

Three (3) Panel type combination receiving and sending stations.

One (1) Master Free Standing Receiving Station.

Operating and generating equipment.

All receiving stations to be built of bronze metal of approved design.

STAR OUTLETS

Furnish and install completely wired, 500 special star light crystal units on cyclorama curtain. Wiring to consist of one switchboard and dimmer control to gridiron, 2 wire stage cable to 50 circuit special Kliegle panel and 1-1/2 KVA 120-6 Volt transformer. All to be arranged and wired as directed.

PREVIEW ROOM WIRING

Furnish and install as directed a complete system of projection and sound wiring in the Preview Room to provide for an installation consisting of two (2) 100 ampere projectors and one (1) 100 ampere spot machine. Include the necessary panel, pocket and outlets, complete with feeder to nearest D.C. panelboard.

UTILITY D.C. POCKETS

Furnish and install completely wired, the following, to be used for D.C. utility purposes:

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

Four (4) 2-gang 150 ampere weatherproof plugging panels enclosed in bronze metal cabinets and located at the marquee roof.

Five (5) single 150 ampere Kliegle or equal #4310 flush wall pockets with ornamental bronze metal door and trim, located in lobby and foyer.

Two (2) Saf-to-fuse distribution panels for the above circuits.

Two (2) 600 ampere 2 P.D.T. switches to transfer one left and one right both 75 KW. Motor generator set from booth use to utility use.

LOSS

There shall not be a loss more than 5 volts in the wiring system when all lights are in use. This loss will be divided as follows:

a. Loss from any switchboard to lighting panels through the building not over three (3) volts in any feeder.

b. Loss from any lighting panel to any building light outlet not over two (2) volts in any branch circuits.

Note:- The test shall be made after the lighting fixtures have been installed and are in operation.

LEAKAGE

The insulation of the circuit work from the switchboards to any outlet shall be made sufficiently perfect in any circuit or branch under full pressure load, to prevent a leakage therein as shown by ringing through a 50,000 Ohm resistance magneto.

Any defect in insulation or ground shall be repaired at once.

TESTS

The Electrical Contractor shall make resistance and ground tests of all wiring by means of volt meter or other approved apparatus during the progress of the work and at such times as the Architects may desire.

These tests shall be made previous to installing of lighting fixtures and in the presence of the Engineer or an authorized representative.

CODE RULES

All work and materials shall be in full accordance with the rules of the National Board of Fire Underwriters and all other Boards or Departments having jurisdiction. The Electrical Contractor shall procure all the necessary and usual certificates for all work installed by him, pay all fees and charges connected therewith and deliver same to the Architects before his work will be finally accepted.

FINAL

All materials and workmanship, such as conduit, switches, wire and everything connected with the electrical installation in the building are to be standard, suitable for the purposes for which they are intended, conforming to standard building construction.

ALTERNATE

The Contractor shall submit a separate proposal covering installation with energy supplied by United Electric Light and Power Company in lieu of Owners Generating Plant furnishing energy on which this specification is based.

With the arrangement of outside source of supply all high tension transformers, network switches and switching equipment will be furnished by Service Company. They will also furnish the high tension cables.

The Contractor shall furnish all labor in installing the high tension cables, also accept the transformer equipment at sidewalk of the site and hoist and install them in their respective transformer rooms in building.

The electrical energy at service will be 13,800 Volt, 3 phase, 3 wire, 60 cycle stepped down by the transformers to 120/208 volt, 3 phase, 4 wire, 60 cycle.

- Auditorium Power Lighting

ADDENDUM NO. 1

to the

SPECIFICATIONS

for the

ELECTRICAL SYSTEMS

for the

METROPOLITAN SQUARE DEVELOPMENT

THEATRE #10

January 26th, 1932.

NOTE

1. This Addendum shall be considered a part of the specifications for the Electrical Systems, and all work mentioned herein shall be governed by the requirements of the said specification.

LIGHT and POWER PANELS

2. The light and power changes covered by this Addendum are indicated on the revised Electrical Plans and Schedules bearing revision date of January 26th, 1932. These changes are approximately indicated in the revision schedules of these drawings.

MAIN CEILING COVE LIGHTING

3. Paragraph 517 is changed to read as follows: "The wiring channels shall be made up in sections each containing four (4) units (one per color) and the sections shall be joined by approved flexible jointed fittings to permit the adjustment in all directions of each section. The channels shall also be of approved design and shall be installed concentric to the curvature of each cove, all as directed.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

ELECTRICAL SYSTEMS FOR THEATRE 10

EXIT SIGNS

4. At each of the exit outlets, except back of the curtain line, this Contractor shall furnish and install a steel box 24" long by 10" high by 5" deep, made of #20 gauge galvanized steel and open at the front. The opening shall set flush with the finished wall and be drilled to receive glass covers furnished by Others.

5. Each steel box shall contain two (2) iron outlet boxes equipped with porcelain lamp receptacles.

FOOTLIGHTS

6. Furnish and install in the Main Footlight Recess, a heavy duty positive action disconnect switch of approved design which shall be in the "On" position when the footlight cover is open and in the "Off" position when the cover is closed. This switch shall operate the relays in connection with the switchboard controls as hereinafter described.

STAGE SWITCHBOARD

7. On each of the footlight controls, (Nos. 1, 13, 25, 37 and 49) furnish and install, completely connected, a single pole relay which shall be energized by the "On" position of the special disconnect switch in the footlight recess. The contacts of the relays shall be in the coil circuit of their respective control contactors. The wiring for this equipment shall be such that when the cover for the footlight recess is in a closed position, the controls for the footlights will be inoperative.

8. Schedule of controls for the Stage Switchboard is changed, omitting seven (7) controls, together with miscellaneous revisions, all as shown on the revised schedule and detail.

LAMPING

9. This Contractor shall install all lamps required for this installation, said lamps being furnished by Others. All lamping shall be done under the direction of the Engineer.

INTERCOMMUNICATING TELEPHONES

10. The automatic switchboard for this system shall be equipped with 110 line switches and eighteen (18) selectors.

The ultimate capacity of this switchboard will be 150 lines and twenty-two (22) selectors.

The two (2) telephones listed for Studio 657 shall be provided with the executive right of way feature.

Telephone No. 98 is added to First Aid Room #019 in the Basement Foyer and said telephone shall be flush wall type.

Telephone No. 99 is added to Try-Out Room #628 on the Studio Floor. Said telephone shall be the desk type.

All telephones listed in the Schedule to be located in cabinets, the said cabinets to be furnished and installed by the Electrical Contractor. These cabinets shall be built of #20 sheet steel and equipped with a bronze metal cover with door, lock and flush hangers. Where such telephones are specified to have an indicating lamp, the said lamp shall be visibly mounted in the trim of these cabinets. The design of said cabinets shall be as approved by the Engineer.

INTERCOMMUNICATING TELEPHONE ALTERNATE

11. State addition to base bid for furnishing and installing completely wired to the automatic switchboard the following intercommunicating telephones complete with swing cables:

Four (4) hand micro. telephones for Passenger Elevators.
One (1) flush wall telephone enclosed in cabinet for Starters' station.
Four (4) hand micro. telephones for Dressing Room Elevators.
One (1) hand micro. telephones for Private Elevator.

ELECTRIC CLOCK SYSTEM ALTERNATE

12. State difference to base bid for furnishing and installing a complete system of approved electric clocks as manufactured by the International Time Recording Company. The system shall be equipped with an hourly Master Supervisor and shall contain the clocks as listed in the specifications.

Addendum No. 1
Electrical
Metrpolitan Square
Theatre #10.

CLYDE N. PLACE
CONSULTING ENGINEER
NEW YORK CITY

MOTOR GENERATOR EQUIPMENT

13. The starters for all motor generator sets, excepting those in the Pre-View Rooms, shall be floor mounted and free standing and of the increment starting type, containg the following starting steps:

75 KW - Six (6) Steps
60 KW - Six (6) Steps
50 KW - Four (4) Steps

All starters for the Pre-View Rooms shall be of the automatic compensator type. All starters to be of approved design.

LIGHTING PANELBOARD "K"

14. Lighting Panelboard "K", complete with feeder, is omitted. Circuits in connection with the mirror lighting in the Grand Foyer is omitted, all as shown on revised plans. The circuits for the Foyer chandeliers are now controlled at Panel "M".

BROADCASTING SYSTEM

15. Two (2) additional control rooms in connection with the Broadcasting System are added and located at each side of the Main Auditorium directly under the choral stair runways. This Contractor shall furnish and install the necessary conduits and furnish the necessary labor for wiring and installing a control panel, relay rack, table and speaker unit in each of these rooms, said equipment being furnished by the Broadcasting Company.

SOUND SYSTEMS

16. All outlet boxes containing "Cannon" receptacles shall be equipped with a suitable approved cover drilled and tapped to receive the receptacles.

All plugs for sound receptacles shall be furnished complete with an approved cable clamp.

Addendum No. 1.
Electrical
Metropolitan Square
Theatre #10.

ADDENDUM NO. 2

to the

SPECIFICATION

for the

ELECTRICAL SYSTEMS

for the

METROPOLITAN SQUARE DEVELOPMENT

THEATRE #10

...

January 27th, 1932.

NOTE

1. This Addendum shall be considered a part of the specifications for the Electrical Systems, and all work mentioned herein shall be governed by the requirements of said specification.

PLAN CHANGES

2. The Plan Changes covered by this Addendum are indicated on the revised Electrical Plans bearing revision No. 2, dated January 27th, 1932. These changes are approximately indicated in the revision schedules of these drawings.

STAGE SWITCHBOARD

3. Paragraph 296 is changed to read as follows: "The operating handles of all switches, dimmers and Selsyn levers and the lenses for the pilot lights shall be of corresponding colors to the lights controlled. All white lights shall be of very low intensity.

CLARK & PRICE
CONSULTING ENGINEERS
NEW YORK CITY

4. Paragraph 302 is changed to read as follows: "It is the intention of these specifications to have the Control Board furnished as a complete wired unit and to avoid unnecessary assembling at the building.

5. Paragraph 307 is amended to include the following sentence: "The phase relation of the generators and their respective motors shall always be synchronized regardless of the position of the generator levers when the excitation circuit is introduced.

6. Paragraph 291 is amended to include a crackled and Parkerized finish of approved color for the entire face of the board, including the control units.

7. Paragraph 325. The second sentence is changed to read as follows: "Terminals for external connections shall be provided at each circuit fuse".

PROJECTION BOOTH EQUIPMENT

8. The D. C. panelboard for the projection booth is revised to provide for all 200 ampere switches and the four (4) switches for the stereoptican machines shall be equipped with 100 fuse adapters.

9. The arc circuits to the spot and effect machines in the projection booth shall be turned up at the rear of the machines and the conduits shall terminate in approved conduiet fitting.

10. Paragraphs 485 and 486 - The instruments for the projection booth panels shall be Weston Model 271 in place of Model 269 as specified. No drilling or mounting will be required for speed indicators.

11. The voltmeter and ammeter on the instrument panels shall indicate the voltage and amperage at the arc.

12. Furnish and install wiring and connections for lamp receptacles in the framing and lamp house section of each projection machine. All receptacles shall be controlled by a circuit to panelboard "F" and the conduit for same shall extend up the base of each projection machine.

Addendum No. 2.
Electrical
Metropolitan Square
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

MOTOR GENERATOR WIRING

13. The field wire between each generator and its respective field rheostat shall be #8 in place of #10 for all generators excepting those in the Preview Room.

14. Paragraph 452 - The ammeters and voltmeters for the instrument panels shall be Weston Model #273 or approved equal.

PANEL CABINETS

15. Paragraph 110 is amended to include the following: "No panel cabinets shall exceed 60" in height and the top of said cabinets shall in no case be higher than 6'-0" above the finished floor, unless otherwise directed."

16. Paragraph 111 is amended to include the following: "The doors and frame of the cabinets shall be made from one piece of steel".

17. Paragraph 140. The portable work lights provided in this paragraph shall be of construction as described in Paragraph 404.

PANEL CONTROL

18. The momentary contact switches for the panel remote control shall be approved heavy duty type.

CONDUIT BUSHINGS

19. Paragraph 178 - Conduit bushings indicated in this paragraph shall be insulated type as described in Paragraph 117.

CABLES

20. Paragraph 361 is changed to read as follows: "Border cables shall be long enough to extend from gridiron junction panels to border lights without disconnecting so that the border light will not be higher than 5'-0" from the stage floor for relamping and cleaning.

Addendum No. 2
Electrical
Metropolitan Square
Theatre #10.

21. This specification also applies to the cables for Bridge, Selsyn and Sound Equipment controls.

WINDLASS WIRING

22. Paragraph 611 - All wiring for the motor operated windlasses in the Grand Foyer is omitted.

FIRE ALARM and WATCHMAN SYSTEM

23. Paragraph 633 is revised to read as follows: "Equipment for these stations and the mechanical key stations will be furnished by the National District Telegraph Company but shall be erected in place, with the necessary connections, by this Contractor.

SEAT PHONE SYSTEM

24. Paragraphs 693 and 694 are changed to provide for fifty-two (52) Accousticon seat phone units in place of two hundred (200) as mentioned in the specification. These units shall be located at the 33rd and 34th rows of the Orchestra section, all as directed and shall be connected on two (2) circuits.

25. Paragraph 695 is changed to provide for the installation of twenty-six (26) duplex phone jack boxes.

WIRING ALTERNATE

26. This Contractor shall state the deduction from his main bid for omitting all wiring and receptacles indicated for the hand dryer circuits in the large public wash rooms.

BORDER LIGHT ALTERNATE

27. State addition to base bid for furnishing and installing completely wired, approved enclosed terminal racks at the cable end of each border light. The terminals on these racks shall have identifications for the circuits connected.

Addendum No. 2.
Electrical
Metropolitan Square
Theatre #10.

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY

GRIDIRON JUNCTION PANEL ALTERNATE

28. State addition to base bid for furnishing and installing completely wired terminal racks in these panels for the border cable and circuit connections. The terminals for these racks shall have identifications for wires connected.

INTERCOMMUNICATING TELEPHONE ALTERNATE

29. This Contractor shall state the deduction from his main bid for the omission of the automatic intercommunicating telephone system (Paragraphs 647 to 657 inclusive) including all wiring for same, as shown on plans.

30. This alternate does not include the omission of the conduit, junction boxes and the like.

31. The conduit system shall be considered as a basis of estimating and will be used in connection with an installation of intercommunicating telephones furnished and installed by the New York Telephone Company.

32. The conduit system shall include the necessary tie-in conduits to the main telephone terminal cabinet located adjacent to the basement foyer.

ADDENDUM NO. 4

to the

SPECIFICATIONS

for the

ELECTRICAL SYSTEMS

for

ROCKEFELLER CENTER

(formerly)

METROPOLITAN SQUARE DEVELOPMENT

OFFICE BUILDING NO. 10

*****

August 3rd, 1932.

NOTE

1. This addendum shall be considered a part of the specifications for the Electrical Systems, and all work mentioned herein shall be governed by the requirements of said specifications.

GENERAL

2. Furnish and install continuous lengths of specially designed indirect reflectors, to be located above bronze and glass ceiling at the main entrance where indicated on plans.

3. Generally, these reflectors are to be made of 20 gauge terne plate casing with properly designed chromium-plated reflectors and shields for proper cut-off of light, as required. It is to have assembled wiring trough with porcelain angle sockets attached thereto on approximately 12" centers, and is to be wired complete with #14 asbestos covered wire connected to circuit work shown on Electrical Drawing #E-1 for control. This drawing bears revision date of July 6, 1932.

4. Reflectors which occur under the suspended ceilings are to be equipped with 40 watt Edison Base Lamps, and those which occur beneath the ceiling beams with 25 watt T-10 Lamps.

5. This equipment must be designed to supply an absolutely uniform illumination through the ornamented glass panels in ceiling without light spots of any kind, and the detail of the equipment must meet with the approval of the Engineer, Architects, and/or Builder.

6. Furnish necessary hangers and supports for mounting reflector troughs on ceiling framework as approved. Reference shall be made to Architects' drawing #201 for details, and construction of glass ceiling, and space available for reflector equipment.

Addendum No. 4.
Electrical
Rockefeller Center
Office Building #10

CLYDE R. PLACE
CONSULTING ENGINEER
NEW YORK CITY